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PRELIMINARY DRAFT

ENVIRONMENTAL IMPACT STATEMENT
FOR PROPOSED CLOSURE OF
BERGSTROM AFB, TEXAS

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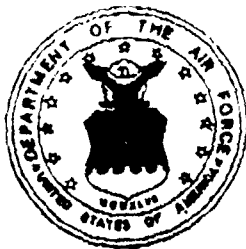
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ENVIRONMENTAL IMPACT STATEMENT

FOR PROPOSED CLOSURE OF

BERGSTROM AIR FORCE BASE, TEXAS

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United States Air Force

May 1990

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COVER SHEET

**DRAFT ENVIRONMENTAL IMPACT STATEMENT
PROPOSED CLOSURE OF BERGSTROM AIR FORCE BASE,
TEXAS**

- a. **Responsible Agency:** U.S. Air Force
- b. **Proposed Action:** Closure of Bergstrom Air Force Base (AFB), Texas
- c. **Written comments and inquiries on this document should be received by TBS and directed to:**
Director of Environmental Planning, AFRCE-BMS/DEP, Norton AFB, San Bernardino,
California 92409-6448.
- d. **Designation:** Draft Environmental Impact Statement (DEIS)
- e. **Abstract:** During the late summer of 1989, the Air Force began a thorough review of its force structure, property, and facility requirements needed to support national security policy and future fiscal realities. As a result of this review process, the Secretary of Defense, on 29 January 1990, announced his proposal to close or realign a number of military bases. Bergstrom AFB, Texas, has been identified as a candidate for closure by late 1993. Prior to closure decisions, studies of strategic, operational, budgetary, fiscal, environmental, and local economic consequences are required under Title 10 USC 2687. In accordance with the National Environmental Policy Act (NEPA), the results of the environmental study are described in this DEIS, which includes analyses of community setting, land use and aesthetics, transportation, utilities, hazardous materials, geology and soils, water resources, air quality, noise, biological resources, and cultural and paleontological resources. The no action alternative was also analyzed in this DEIS. If a decision is made to close Bergstrom AFB, a second EIS will be prepared to cover the final disposition/reuse of the excess property. After base closure, but prior to final decisions on reuse, a caretaker force would be established to provide maintenance of buildings, grounds, and essential utility systems, and to restrict access to the base.

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SUMMARY

PURPOSE AND NEED

During the late summer of 1989, the Air Force began a thorough review of its force structure, property, and facility requirements needed to support national security policy and future fiscal realities. As a result of this review process, the Secretary of Defense, on 29 January 1990, announced his proposal to close or realign a number of military bases. Bergstrom Air Force Base (AFB), Texas, has been identified as a candidate for closure by late 1993. Prior to closure decisions, studies of strategic, operational, budgetary, fiscal, environmental, and local economic consequences are required under Title 10 USC 2687. In accordance with the National Environmental Policy Act (NEPA), the results of the environmental study are described in this Draft Environmental Impact Statement (DEIS). If a decision is made to close Bergstrom AFB, a second EIS will be prepared to cover the final disposition/reuse of the excess property. After base closure, but prior to final decisions on reuse, a caretaker force would be established to provide maintenance of buildings, grounds, and essential utility systems, and to restrict access to the base.

SCOPE OF STUDY

The Air Force initiated the scoping process on 9 February 1990 with the publication in the *Federal Register* of the Notice of Intent to prepare an EIS to address impacts of the proposed closure of Bergstrom AFB, Texas. A public scoping meeting was held on 19 March 1990 in Austin, Texas. This meeting was conducted to solicit public comments and to identify environmental concerns related to the possible closure actions. Comments were also invited on the environmental issues that should be analyzed in subsequent studies on the final disposition/reuse of base properties. The scope of study for this EIS was based on the results of the public scoping process, discussions with public officials, past experience with programs of a similar nature, and the requirements of NEPA.

According to the Council on Environmental Quality regulations for implementing NEPA, "The NEPA process is intended to help public officials make decisions that are based on understanding environmental consequences, and take actions that protect, restore, and enhance the environment" (40 CFR 1500.1). The focus of this EIS is, therefore, on evaluation of impacts to the environment

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associated with the proposed action and its alternatives. In order to provide the context in which impacts to the environment may occur, discussions of potential changes to community setting, land use and aesthetics, transportation, and community utility services are included in the EIS. In addition, issues related to current and future management of hazardous materials are discussed. Impacts to the natural or physical environment are evaluated for the following resource categories: geology and soils, water resources, air quality, noise, biological resources, and cultural and paleontological resources. These impacts may occur as a direct result of base closure or as an indirect result of changes to the community or changes in hazardous material management practices.

CHANGES TO THE LOCAL COMMUNITIES

Base closure would cause changes in the support communities surrounding Bergstrom AFB.

Community Setting. The closure of Bergstrom AFB would reduce employment in the City of Austin and Travis County, Texas, by approximately 9,800 jobs, resulting in a decrease in local spending of approximately \$250 million annually. Total population outmigration may reach 20,000 people, about 4 percent of the current (1990) population in the City of Austin. As a result, housing vacancy rates may increase over the current rate by about 3 percent. Enrollment in the Del Valle School District would decline by about 800 students, approximately 14 percent of the current enrollment. About 19,000 military retirees and their dependents would seek alternative medical and other services currently provided by the base.

Land Use and Aesthetics. Existing land use patterns, which are driven by noise and aircraft accident potential, may change because of the reduction of these impacts. Zoning would not be immediately changed. The lease agreement for the recreational area at Lake Travis would be terminated.

Transportation. Reductions in base-related traffic should have a positive effect on local roadways. Roadways in the Austin area should not be adversely affected by increased truck traffic for transporting equipment during closure. Reductions in military aircraft operations may reduce the potential for aircraft accidents.

Utilities. The solid waste stream would be reduced as a result of base closure, which would increase the lifespan of the landfill. Reduced water and energy consumption would have a positive effect. Wastewater reduction should have an insignificant effect on the new wastewater treatment plant.

HAZARDOUS MATERIALS

The Installation Restoration Program is independent of closure and would not be affected. Base closure would significantly reduce hazardous materials storage, use, and possible spills and accidents - all positive impacts. Positive impacts are expected from clean-up of hazardous materials such as asbestos, oil/water separators, underground and aboveground storage tanks, and radioactive materials.

IMPACTS TO THE PHYSICAL ENVIRONMENT

Impacts to the physical environment associated with closure of Bergstrom AFB are summarized in Table SI. Under the no action alternative, Bergstrom AFB would remain active. This alternative would not alleviate growing fiscal constraints or allow the necessary streamlining of the strategic forces. With Bergstrom AFB remaining active, the City of Austin is expected to proceed with the development of new airport facilities at the Manor site. The consequences of this development are discussed in a separate document prepared by the Federal Aviation Administration.

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Table S1

**Impacts to the Physical Environment
Associated with Closure of Bergstrom AFB, Texas**

Resource Category	Impacts of Base Closure
<hr/>	
Geology and Soils	<ul style="list-style-type: none">● No impact on geologic resources underlying the base.● Positive impacts from reduced disturbance of soil and a reduction in soil contamination potential from storage and spills of hazardous materials.
Water Resources	<ul style="list-style-type: none">● Positive impacts on surface and groundwater resources through reduction of the risk of contamination from spills and stormwater runoff. Minor reduction in potable water demand.
Air Quality	<ul style="list-style-type: none">● Air pollution emissions would be significantly reduced, resulting in a positive impact. The 924 Air Force Reserve (AFRES) and Regional Garrison Control Facility would continue operations, but the amount of pollutant emissions from these operations would not adversely affect the regional air quality.
Noise	<ul style="list-style-type: none">● Noise from aircraft and motor vehicles would be significantly reduced, resulting in a positive impact. The 924 AFRES would continue operations and therefore continue producing noise, although with smaller noise contours than currently exist.
Biological Resources	<ul style="list-style-type: none">● Base closure would have a positive impact on wildlife onbase.● Vegetation would be maintained at a minimal level by the caretaker program.
Cultural and Paleontological Resources	<ul style="list-style-type: none">● Potential for disturbance to cultural resources would be reduced with base closure. Impacts would be generally beneficial.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The Department of Defense has a continuing policy to identify facilities, property, and installations that are no longer essential to support current or programmed force structure. During the late summer of 1989, the Air Force began a thorough review of its force structure, property, and facility requirements needed to support national security policy and future fiscal realities. As the Air Force went through the process of determining how best to scale its assets to the threat environment and fiscal constraints, it found that existing Air Force property use is not always maximized. In addition, the perceived reduced Soviet military threat has provided the opportunity to consider scaling down United States military force structure. As a result, the Secretary of Defense, on 29 January 1990, announced his proposal to close or realign a number of military bases. Bergstrom Air Force Base (AFB), Texas, has been identified as a candidate for closure.

Base closure is defined as the inactivation of all flying and support units, and the transferral of all personnel and equipment. No construction or demolition activities are planned as part of this proposed closure action. A caretaker team will be established in the event of closure to provide sufficient maintenance to prevent deterioration of buildings, perform minimal maintenance of grounds, maintain the water supply system, and provide adequate security. The installation will remain under Air Force control within a secured boundary.

During 1990, the Air Force will address closure and realignment options along with the strategic, operational, budgetary, fiscal, environmental, and local economic consequences of the potential closure of Bergstrom AFB as required by Title 10 USC 2687. In accordance with the National Environmental Policy Act (NEPA), the decision on whether or not to proceed with the closure of Bergstrom AFB will not be made without an analysis of the environmental consequences of the proposal. As part of this environmental study process, the Air Force has prepared this Environmental Impact Statement (EIS) to assess the potential environmental impacts of the possible closure of Bergstrom AFB. If a decision is made to close the base, a second EIS will be completed to cover the final disposition/reuse of the excess property.

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1.2 SCOPING PROCESS

The Council on Environmental Quality (CEQ) regulations implementing NEPA require an early and open process for determining the scope of issues related to the proposed action. The Air Force initiated this process with the publication of a Notice of Intent to prepare an EIS for the proposed closure action in the *Federal Register* on 9 February 1990. Soon after, written requests were sent by the Air Force to the responsible federal, state, and local agencies to submit their concerns and issues to be analyzed in the EIS. On 19 March 1990, a public scoping meeting was conducted at the LBJ Library Auditorium in Austin, Texas, to solicit comments and identify concerns related to the closure of Bergstrom AFB. Comments were also invited on the environmental issues that should be analyzed in subsequent studies on the final disposition/reuse of base property.

1.2.1 Summary of Scoping Issues

The following issues and concerns were identified either at the scoping meeting for the proposed closure of Bergstrom AFB or in written statements received before or after the meeting. Comments that are related to environmental issues are presented first, followed by general comments. Only environmental issues have been analyzed in this EIS.

- A new city airport at Bergstrom AFB would preclude paving over thousands of farmland acres by the proposed airport at the Manor site.
- The EIS should discuss the contamination of soils by toxic/hazardous waste substances at the base.
- The extent of surface water and groundwater contamination should be investigated.
- Noise pollution is bad in southeastern Austin but would improve with base closure.
- Net noise level effects of the different airport proposals should be investigated.

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- Investigate hazardous waste problems at Bergstrom AFB. Discuss who would clean up, would pay, how long it would take, and where the material would be interred or destroyed.
- There is a City of Austin landfill at the south end of the main runway. If joint use was agreed to, it might require closing or modifying the landfill.
- Discuss whether the Regional Corrosive Control Facility currently at Bergstrom AFB can coexist with a civilian airport.

General Comments. A number of comments were made with respect to the socioeconomic impacts of base closure, to keep Bergstrom AFB open, to use the base as a joint military-civilian or strictly civilian facility, and on the proposed construction of a new airport at the Manor site. These are summarized below.

- The Austin economy is depressed because of slumping oil production, which in turn has hurt home and office construction. Closure of Bergstrom AFB would exacerbate this problem. In 1988, Bergstrom AFB spent \$526 million, of which \$339 million was spent within the economic impact region, an area within a 50-mile radius of the base.
- Discuss the problems and costs involved in relocating personnel to other bases.
- Discuss the costs of using Bergstrom AFB as a commercial airport.
- Concerned about closing Bergstrom AFB after \$100 million was spent in upgrades in the last 3 years.
- Closure of Bergstrom AFB would add to the number of property foreclosures. The federal government would lose money overall if approximately 2,000 houses are dumped on an already depressed real estate market.
- Municipal bonds may be downgraded with closure of the base.

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- Discuss the effect of base closure on local tax revenue.
- Discuss whether water and sewer rates would increase for utility customers after base closure and if compensation would be made to the citizens of Austin who have provided the funding for water, sewer, and road systems to support Bergstrom AFB.
- Closure puts utility planning in jeopardy.
- With base closure, there would be less energy consumption.
- Retirees cannot drive to San Antonio or Mount Hood; they need the commissary and health services provided by Bergstrom AFB. Cost of civilian medical facilities would hurt retirees on fixed incomes.
- Veterans have a high unemployment rate, which would worsen with base closure.
- *If Bergstrom AFB is closed, the Del Valle School District would lose approximately 800 students who are Air Force dependents. Volunteers from the base make great contributions to the Del Valle School District. This benefit would be lost with the closure of the base.*
- The Del Valle School District and Travis County government depend heavily on property taxes to fund education, law enforcement, roads, and human services. With the closure of the base, thousands more homes would be thrown on the market, which would reduce the tax base.
- Hidden supports such as school district funding, highway support, and military use of local hospitals, which are federally funded and supported under the Civilian Health and Medical Program of the Uniformed Services, need to be considered.
- Bergstrom AFB should not be closed because it is unique in its ability to handle any type of aircraft with its large runway; Bergstrom AFB has the only active RF-4 and active duty manned reconnaissance units in the United States; Bergstrom AFB has a

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superior physical plant; Bergstrom AFB is strategically located; and Bergstrom AFB is ideally located for training combat air crews.

- Bergstrom AFB could be converted into a high technology research center.
- In lieu of its current mission, Bergstrom AFB could accommodate other military or naval operations; support and research and development missions; quasi-military operations carried out by the Coast Guard, Border Patrol, Drug Enforcement Agency, FBI, INS, etc.; and nonmilitary operations currently carried out by units of other federal agencies and departments in the Austin area at sites not owned by the federal government.
- The proposed Manor Airport would have a significant impact on noise levels, air and water quality, wildlife, prairies, wetlands, and farmland. All of central Texas would be negatively affected by the increased suburban sprawl and traffic congestion.
- If Austin had to build a new civilian airport instead of taking over Bergstrom AFB, it would cost almost \$1 billion, not taking into account the costs of ground access, infrastructure, and pollution mitigation measures.

1.2.2 Issues Beyond the Scope of the EIS

Concerns and issues regarding impacts that would be caused by the disposal of the facilities or their reuse were also expressed in the public scoping meeting and through written comments received during the comment period. Issues that were identified as beyond the scope of this EIS include the following:

- Environmental impacts of Bergstrom AFB reuse as a civilian use.
- Socioeconomic impacts on local communities including changes in jobs, population, school enrollments, housing, income, property values, tax revenues, and other local economic activities resulting from disposition or reuse of the base facilities.

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- Continuation of the Installation Restoration Program (IRP) activities. The IRP sites are addressed only to the extent that they are related to the closure action.
- The potential environmental impacts that may occur at the receiving bases.

1.2.3 Related Environmental Studies

Other studies recently completed or being conducted by federal, state, or local agencies that are closely related to the proposed closure of Bergstrom AFB include the following:

- In addition to this EIS, the Air Force is conducting five other studies as required by Title 10 USC 2687. These are:
 - A strategic study that will address the changing global military power base and examine the interplay between force structure, national defense policy, and power projection requirements. This study will also address the impact of reducing conventional, strategic, and space systems as the threat to national security is reduced.
 - An operational study that will address the operational environment of aircraft and identify special operational characteristics, restricted areas, military operating areas, zoning, range-use rights, and other significant operational issues. It will also include all tenant units and joint service missions, supported or needing replacement if the decision is made to close the installation.
 - A budgetary study that will determine current year programmed dollar costs and savings associated with the relocation or retirement of the aircraft and the inactivation or relocation of associated operations and support units.
 - A fiscal study that will use the budget evaluation as a springboard, and analyze past, present, and future costs and savings associated with the retirement of aircraft and the inactivation or relocation of associated

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operational and support units. Costs of closing and savings will be detailed through a life-cycle cost model.

- A local economic consequences study that will address the direct payroll loss to the immediate community and the secondary payroll impact on local businesses caused by the loss of military personnel, dependents, and civilian workforce. In addition, the study will examine the effects on the local real estate market and schools from a loss of personnel. If data are available, the study will address losses to other local industries that depend on the base. The study will also cover projected growth in the community and the potential for reuse, both interim and long term, if available.
- Separate environmental documents are being prepared for the transfer of aircraft to Mountain Home AFB, Idaho, and the relocation of Air Force units to Davis-Monthan AFB, Arizona. Additional documents will be prepared when the destination of other Air Force units is finalized.
- In April 1990, the City of Austin completed a report entitled *Bergstrom AFB Feasibility Study* to determine the feasibility of using Bergstrom AFB as a viable alternative to the Manor site for the establishment of a new commercial airport to serve the Austin metropolitan region well into the 21st century.
- In 1990, the Federal Aviation Administration prepared environmental documentation to support the airport layout plan approval, airport location approval, and construction of a new commercial service airport to be located in Manor, Texas, to serve the City of Austin and the surrounding communities. Further documentation is still under preparation.

1.3 RELEVANT FEDERAL, STATE, AND LOCAL STATUTES, REGULATIONS, AND GUIDELINES

Federal:

- NEPA: Requires consideration of environmental impacts in federal decision-making.

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- President's CEQ regulations: Implement the NEPA process.
- Endangered Species Act of 1973: Conserves ecosystems for the use of endangered or threatened species.
- National Historic Preservation Act: Protects districts, buildings, sites, and objectives significant to American history.
- Clean Water Act: Reduces water pollution and the discharge of toxic and waste materials into all waters.
- Clean Air Act: Reduces air pollution dangerous to public health, crops, livestock, and property.
- Resource Conservation and Recovery Act: Regulates the disposal of hazardous waste.
- Federal Insecticide, Fungicide, and Rodenticide Act: Controls the application of pesticides to provide greater protection to humans and the environment.
- Comprehensive Environmental Response Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act: Provides for liability, compensation, clean-up, and emergency response for hazardous substances released into the environment and the clean-up of inactive hazardous waste disposal sites.
- Toxic Substance Control Act: Regulates commerce and protects human health and the environment by requiring testing and use restrictions on certain chemical substances and for other purposes.
- Intergovernmental Review of Federal Programs, Executive Order 12372: Provides the opportunity for consultation by state and local governments of federal financial assistance or direct federal development.

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- Environmental Impact Analysis Process (AFR 19-2): Gives specific procedural requirements for Air Force implementation of NEPA.
- Pollution Abatement and Environmental Quality (AFR 19-1): States policies and assigns responsibilities for the development of an organized, integrated, and multidisciplinary environmental protection program to ensure the Air Force, at all levels of command, conducts its activities in a manner that protects and enhances environmental quality.
- Environmental Pollution Monitoring (AFR 19-7): Sets up environmental pollution monitoring program for Air Force installations.
- Interagency and Intergovernmental Coordination of Land, Facility, and Environmental Plans, Programs, and Projects (AFR 19-9): Requires intergovernmental and interagency coordination.
- Conservation and Management of Natural Resources (AFR 126-1): Provides policies, procedures, and functional responsibilities for managing and conserving soil, water, forest, fish, wildlife, and outdoor recreation resources on Air Force lands.
- Natural Resources Land Management (AFR 126-2): Provides for development, improvement, maintenance, and conservation of real property at Department of Defense installations.

State:

- Antiquities Code of Texas: Establishes a committee to oversee the preservation of archaeological sites and materials, establishes a permitting process, and enforcement procedures.
- The Environment Policy, Guidelines and Procedures for Processing EISs, Texas.

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- **Texas Clean Air Act of 1967 and Amendments:** Establish a state air control board which oversees establishment and enforcement of air quality standards.
- **Texas Motor Vehicle Emissions Inspection Act:** Provides a commission to establish uniform safety standards.
- **Texas Air Pollution Control Regulations: General Provisions and Regulations I through IX:** Define types of air pollution, sources of pollution, and standards for emissions.
- **Texas Consolidated Permit Rules:** Establish permitting process and conditions for waste disposal activities including hazardous wastes; defines enforcement and violations.
- **Texas Water Quality Acts of 1967 and Amendments:** Establish state water rights commission which oversees establishment and enforcement of water quality standards.
- **Texas Wastewater Treatment Regulations:** Define standards for wastewater treatment, collection, transportation, and disposal.
- **Texas Solid Waste Disposal Act of 1969 and Amendments:** Define responsibilities of state and county agencies for disposal of solid or hazardous wastes.
- **Texas Litter Abatement Act of 1981:** Identifies prohibited disposal activities and locations, establishes required licenses and permits, and establishes responsibilities for owners of junkyards and automobile graveyards.
- **Texas Solid Waste Regulations:** Establish permitting and licensing procedures, operational standards for landfills, and compliance and enforcement.
- **Texas Industrial Waste Management Regulations:** Establish standards for industrial waste, storage, transportation, and disposal; groundwater monitoring, and closure treatments.

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- Texas Hazardous Waste Management Regulations: Establish standards for hazardous waste, storage, transportation and disposal, and permitting procedures.

Local:

- No local statutes or regulations pertain to the base closure process.

2.0 ALTERNATIVES INCLUDING PROPOSED ACTION AND SUMMARY OF IMPACTS

2.1 INTRODUCTION

The perceived reduction in the Soviet military threat has provided the opportunity to consider scaling down the United States force structure. Growing fiscal constraints on the U.S. Government mandate efficient consolidation of the nation's force structure and the elimination or retirement of weapon systems no longer required to support national policy. As a result of these considerations, in-theater reconnaissance forces, in addition to other weapon systems, have been judged excess to the Department of Defense's (DOD) requirement. The DOD is, therefore, studying the closure of numerous military installations across the United States, including Bergstrom Air Force Base (AFB), Texas.

2.2 DESCRIPTION OF THE PROPOSED ACTION

The proposed action is to close Bergstrom AFB by the end of fiscal year (FY) 1993. Closure of Bergstrom AFB would involve the following unit relocations and deactivations:

- Relocation and/or retirement of RF-4Cs from the 67th Tactical Reconnaissance Wing (67 TRW) to another base. Relocation includes moving 18 to 36 RF-4C aircraft to Mountain Home AFB, Idaho (Figure 2.2-1).
- Relocation of the 712th Air Support Operations Squadron to a location to be determined.
- Relocation of the following units to Davis-Monthan AFB, Arizona:
 - Headquarters 12th Air Force (HQ 12 AF);
 - 12th Tactical Intelligence Squadron;
 - 602nd Tactical Air Control Center Squadron;
 - 4500th School Squadron, Detachment 2; and
 - 12th Weather Squadron.
- Deactivation of all remaining Bergstrom AFB active duty units.

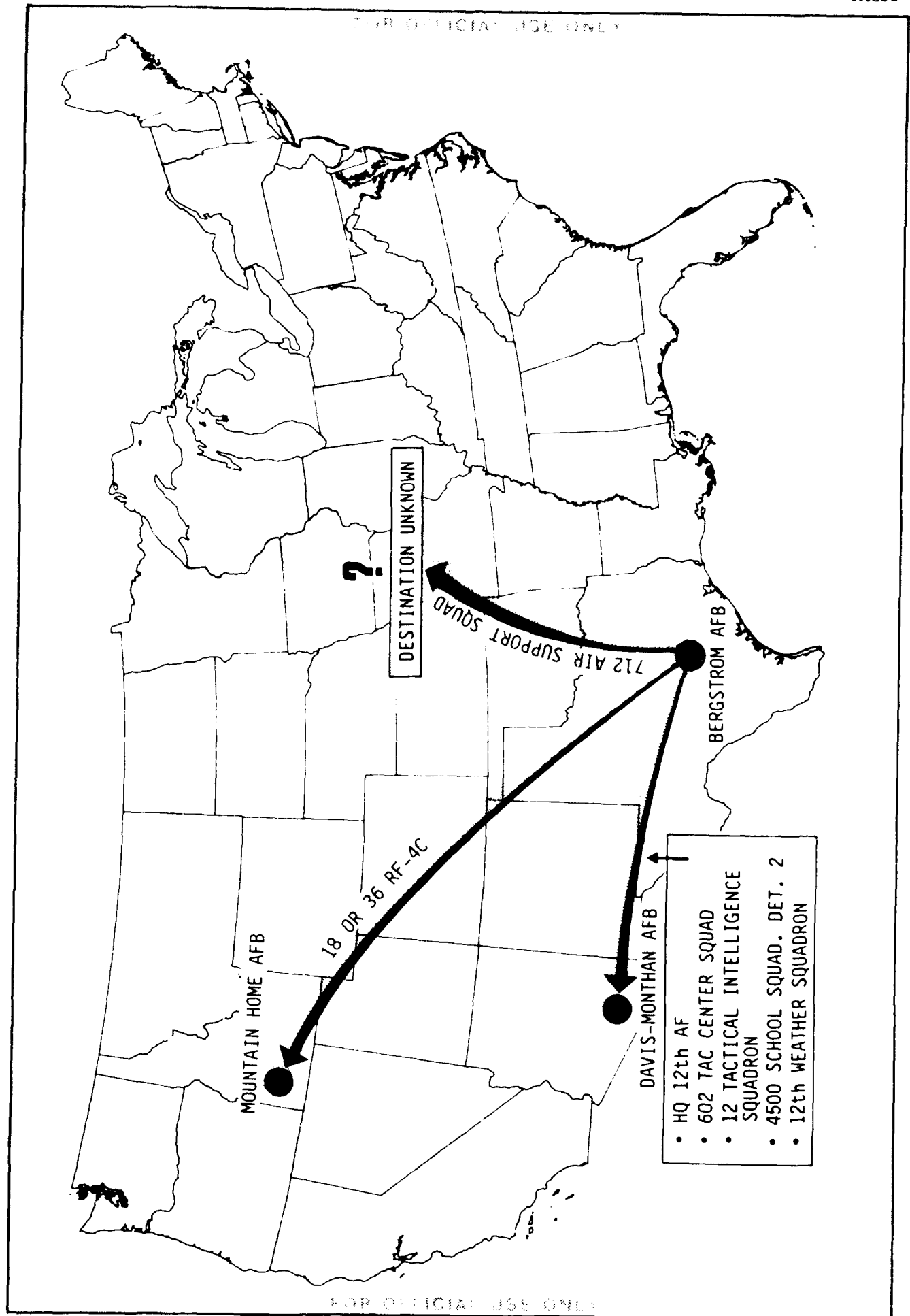


FIGURE 2.2-1 RELOCATION OR DEACTIVATION OF UNITS FROM BERGSTROM AFB, TEXAS

The 67 TRW comprises two Tactical Reconnaissance Squadrons (TRSs), the 12 TRS and the 91 TRS, with 18 RF-4s each. The primary mission of the wing is to maintain a combat-ready air reconnaissance force. Other organizations within the wing include the 67th Air Base Operability Squadron, 67th Aircraft Generation Squadron, 67th Civil Engineering Squadron, 67th Component Repair Squadron, 67th Combat Support Group, 67th Comptroller Squadron, 67th Equipment Maintenance Squadron, 67th Medical Group, 67th Mission Support Squadron, 67th Security Police Squadron, 67th Service Squadron, 67th Supply Squadron, and 67th Transportation Squadron. Disposition of these organizations would depend on decisions made on the relocation and retirement options for the wing's aircraft.

Another major Tactical Air Command (TAC) organization at Bergstrom AFB is the HQ 12 AF. The HQ 12 AF is the Headquarters responsible for all TAC reconnaissance and fighter operations based west of the Mississippi River. The 12 AF mission is to command, administer, and supervise training of assigned and attached forces, and to ensure the operational readiness of designated TAC-gained units of the Air Reserve Component prior to mobilization. The HQ 12 AF would be relocated to Davis-Monthan AFB, Arizona.

Bergstrom AFB is also home for the 602nd Tactical Air Control Group (602 TACG), comprising the 602nd Tactical Air Control Center Squadron, the 712th Air Support Operations Squadron, and the 12th Tactical Intelligence Squadron. When deployed, the group and its units are the main component of the Tactical Air Control System (TACS) and directly support the HQ 12 AF Commander in planning, directing, and managing all tactical operations in a theater or contingency area. The three squadrons would be relocated. The 602 TACG would be inactivated; its intermediate command function would no longer be needed after collocation of the squadrons with the parent wing (602nd Tactical Air Control Wing) at Davis-Monthan AFB.

The only other TAC organizations at Bergstrom AFB are the 4500th School Squadron, Detachment 2, and the 4400th Management Engineering Squadron, Detachment 67. The school is better known as the TAC Non-Commissioned Officer Academy West. Its mission is to conduct management and leadership training for E-6 selectees, E-6s, and E-7s. This organization would also be relocated to Davis-Monthan AFB. The 4400 Management Engineering Squadron detachment would not be needed after base closure, and would therefore be inactivated.

Other tenant organizations at Bergstrom AFB include Det 504, Tactical Audit Office; Det 423, 3752nd Field Training Squadron, the 3622nd Air Force ROTC Squadron; Det 802, Air Force Commissary

Service; the 1882nd Communications Squadron; Det 10, 25th Weather Squadron; and Det 1001, Air Force Office of Special Investigations. Most of these units would probably be inactivated as a result of the proposed action, but actual dispositions are yet to be determined by their owning commands.

Under the proposed action, the following units of the Air Force Reserve (AFRES) would remain in place: Headquarters 10th Air Force (10 AF), the 924th Tactical Fighter Group (TFG), and their AFRES support units.

The 10 AF is the headquarters of flying and nonflying AFRES units located throughout the United States. Its mission is to ensure the units under its control are operationally ready in the event of mobilization or if they are needed in support of civil defense and natural disaster civil relief. If mobilized, these units support seven different major commands.

The 924 TFG has only one flying squadron, the 704th Tactical Fighter Squadron, with 18 F-4E aircraft. The squadron will transition to F-16A aircraft in the fourth quarter of FY 1991. Its mission is to maintain readiness for possible mobilization in times of national emergency. The aircraft perform counterair, interdiction, and close air support missions. These 18 F-16A would remain as part of the AFRES presence after base closure. Other organizations within the 924 TFG include 924th Civil Engineering Squadron, 924th Consolidated Maintenance Squadron, 924th Communications Squadron, 924th Combat Support Squadron, 924th Security Police Flight, and 924th Tactical Hospital.

The Air Force also plans to leave the Regional Corrosion Control Facility in operation at Bergstrom AFB. All these organizations would continue to operate at Bergstrom AFB unless the developed reuse plan would preclude their operation from the airfield.

Manpower Drawdown Schedule. Total manpower positions currently authorized for Bergstrom AFB units (other than the AFRES positions that would remain) are approximately 5,000 military and 500 civilians. The proposed schedule for manpower drawdown, as a result of the base closure, is shown in Figure 2.2-2.

2.3 NO ACTION ALTERNATIVE

Under the no action alternative, Bergstrom AFB would remain active. RF-4C aircraft of the 67 TRW would not be retired or relocated. The base structure would be maintained at its current level. This

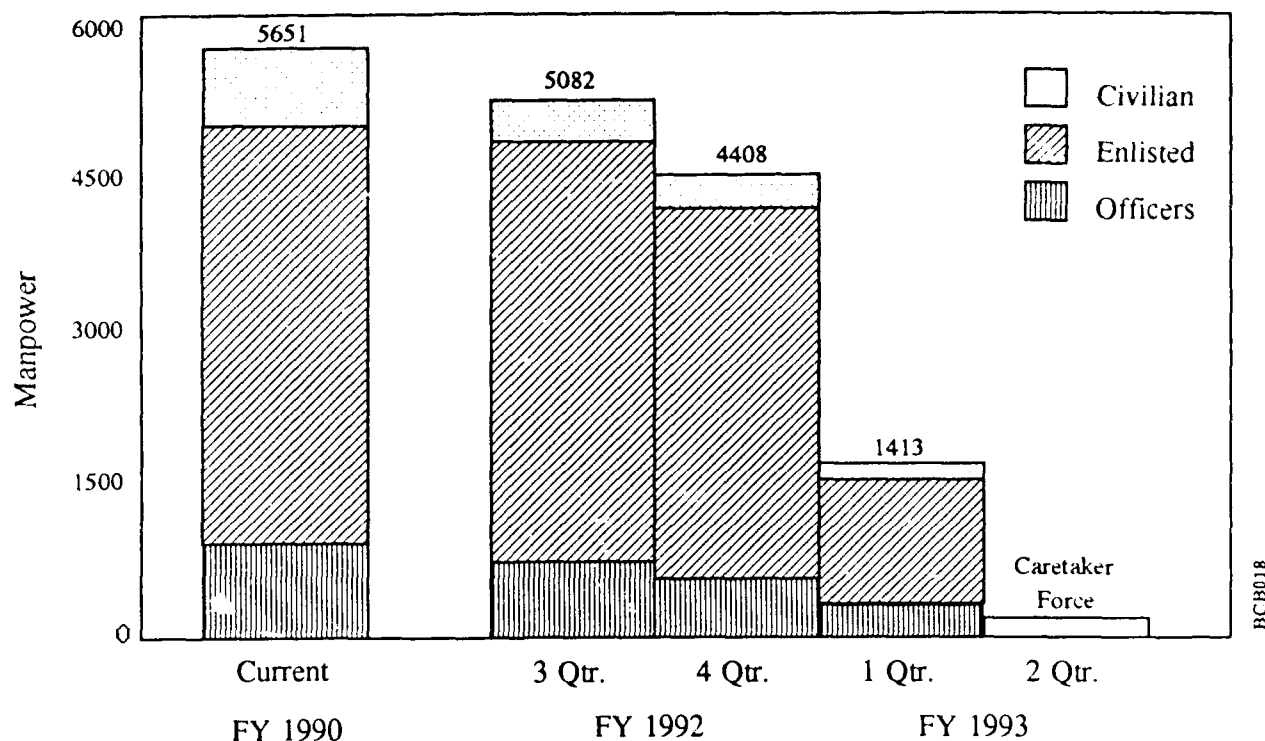


FIGURE 2.2-2 MANPOWER DRAWDOWN SCHEDULE FOR THE PROPOSED CLOSURE OF BERGSTROM AFB, TEXAS

alternative would not alleviate growing fiscal constraints or allow the necessary streamlining of the tactical forces. Since 1974, the City of Austin has been exploring viable alternatives for airport facilities to meet future airport capacity needs for the Austin metropolitan area, to eliminate airspace conflicts with Bergstrom AFB, to stimulate additional industry and business for the area, and to provide for the development of a safe, efficient, and environmentally compatible commercial service airport to serve Austin and other surrounding communities in the metropolitan area. In 1988, the Federal Aviation Administration (FAA) determined the Manor site as the best potential airport location. Environmental documentation was conducted, and the FAA issued a Finding of No Significant Impact in 1990. With the announcement of the proposed closure of Bergstrom AFB in January 1990, the Austin City Council put on hold the acquisition of land at the Manor site and conducted a feasibility study to determine if Bergstrom AFB could be used as a civilian airport. In April 1990, the study concluded that Bergstrom AFB would be a viable alternative to the Manor site.

If Bergstrom AFB remains active, the City of Austin is expected to proceed with the land acquisition and development of airport facilities at the Manor site. However, until the site is developed, airspace conflicts between Bergstrom AFB and Robert Mueller Airport will continue.

2.4 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Two alternatives were investigated but eliminated from further consideration. These are:

The Retirement and/or Relocation of RF-4s From, and Closure of, an Alternate Base Either Overseas or in the Continental United States. Across-the-board drawdowns are proposed overseas as part of the Conventional Forces in Europe negotiations. These reductions will be in addition to, and not instead of, any stateside drawdowns. In the continental United States, Bergstrom AFB is the only base with an active duty manned reconnaissance mission and RF-4 aircraft. Therefore, closure of an alternate base is not an option.

Retirement and/or Relocation of the RF-4s From Bergstrom AFB and Backfilling With Another Mission. Because of budget constraints and the resultant force structure reductions, the aircraft and dollars necessary to support a replacement mission at Bergstrom AFB are not expected to be available. This, in addition to the military construction requirements for a new mission, precludes this alternative.

2.5 SUMMARY OF ENVIRONMENTAL IMPACTS

A complete summary of changes to the local community, changes in hazardous materials management practices, and impacts to the physical environment is provided in the Summary and Table S1. Detailed discussions are provided in Chapter 4.0, Environmental Consequences.

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3.0 AFFECTED ENVIRONMENT

Chapter 3.0 provides descriptions of the environmental context and affected environment at Bergstrom Air Force Base (AFB), Texas. The parameters of the local community, community setting, land use and aesthetics, transportation, and utilities are detailed because changes in these conditions may cause impacts to the physical environmental resources. Issues relating to the current treatment of hazardous materials are also discussed. Baseline environmental conditions are organized within the following resource categories: geology and soils, water resources, air quality, noise, biological resources, and cultural and paleontological resources.

3.1 INSTALLATION BACKGROUND

Bergstrom AFB began operations in 1942 as Del Valle Army Air Base. The base was renamed Bergstrom Army Air Field in 1943 at the urging of former President (then Congressman) Lyndon B. Johnson. The airfield was renamed after Captain John August Earl Bergstrom, believed to be the first Austin citizen killed in World War II. Bergstrom Army Air Field was renamed Bergstrom Field in 1943, and was again changed in 1948 to Bergstrom AFB after the creation of the Air Force as a separate branch of service. Bergstrom AFB was initially the home to troop carrier units, some of which participated in the Berlin Airlift in 1948 and 1949. The base was transferred to the jurisdiction of the Strategic Air Command (SAC) in 1949. The 27th Fighter Wing arrived in 1949, and the 12th Fighter Escort Wing arrived in 1950. Bergstrom AFB's importance grew with the addition of the 42nd Air Division in 1951. In 1957 the base was transferred to the Tactical Air Command (TAC) and in 1958 the base was assigned to the 12th Air Force. In October 1958 the base was once again transferred to SAC, and it became the home of the 4130th Strategic Wing. The 4130th became a unit of the 2nd Air Force. In 1963 the 4130th became the 340th Bombardment Wing.

In 1966 the base again came under the jurisdiction of TAC. The base became the home of the 75th Tactical Reconnaissance Wing, a unit of the 12th Air Force. The 602nd Tactical Control Group moved to Bergstrom AFB in 1966; this group operates a complete tactical aircraft control and warning subsystem in support of contingencies throughout the world. The parent unit to Bergstrom AFB's tactical activities, Headquarters (HQ) 12th Air Force, moved to Bergstrom AFB in the summer of

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1968. At that time, the 12th Air Force was responsible for all TAC reconnaissance, fighter, and airlift operations based west of the Mississippi River.

In July 1971 the 75th Tactical Reconnaissance Wing (TRW) was deactivated and replaced by the 67th TRW, a move which made Bergstrom AFB the only tactical reconnaissance base west of the Mississippi River. Two organizations of the Air Force Reserve (AFRES) moved to Bergstrom AFB in March 1976: the Central Air Force Reserve Region Headquarters, redesignated the 10th Air Force (Reserve) in October 1976, and the 924th Tactical Airlift Group, which was later redesignated the 924th Tactical Fighter Group. The 10th Air Force is the Headquarters for SAC-and TAC-gained AFRES units in the United States; it supervises the training of more than 20,000 Air Force reservists in 18 flying and nonflying units. In 1982, the 45th Tactical Reconnaissance Training Squadron (TRTS) and 62nd TRTS moved to Bergstrom AFB. This gave the 67 TRW two operational flying units (12th Tactical Reconnaissance Squadron [TRS] and the 91st TRS), and two flying training units (45th TRTS and 62nd TRTS). An academic training squadron, the 67th Tactical Training Squadron, was activated at Bergstrom AFB in 1982. Bergstrom AFB, with its combined training and operational missions, is regarded as the Air Forces' home of tactical reconnaissance. The 45th TRS was inactivated in October 1989.

3.2 LOCAL COMMUNITY

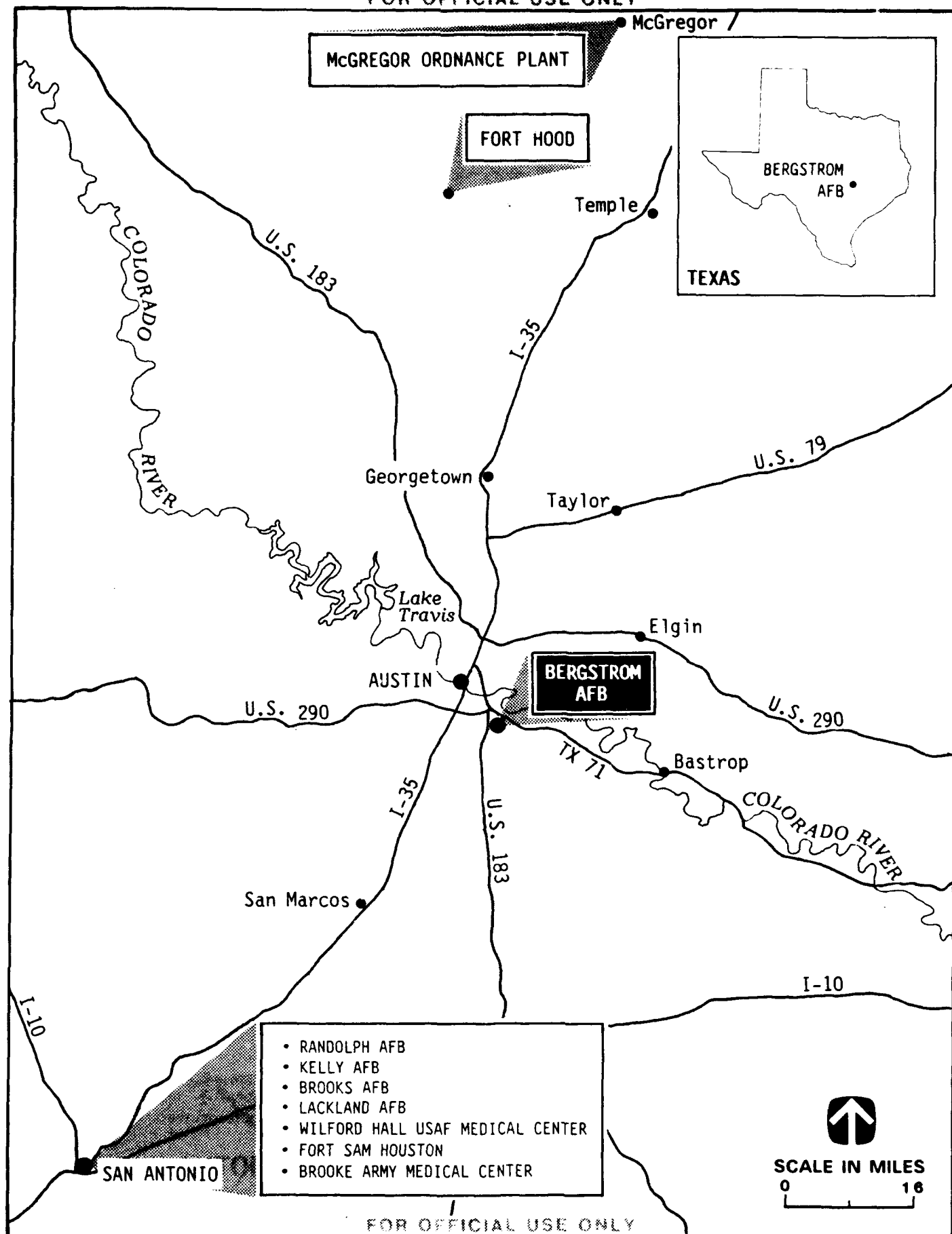
3.2.1 Community Setting

Bergstrom AFB is located in central Texas within Travis County. The host community serving the base, the City of Austin, is approximately 7 miles northwest of the base. San Antonio, a major metropolitan center, is about 80 miles to the south (Figure 3.2.1-1). Bergstrom AFB is bordered by U.S. 183 on the west and State Route 71 on the north and northeast (Figure 3.2.1-2). The town of Del Valle is northeast of the installation across State Highway 71.

3.2.1.1 Population and Employment

Bergstrom AFB employed approximately 8,000 personnel in fiscal year (FY) 1989, including 4,780 active duty Air Force, 1,345 AFRES, 1,071 appropriated fund civilians, and 843 civilians in other categories. Secondary employment related to base activity is estimated to include about 2,900 jobs.

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FIGURE 3.2.1-1 REGIONAL SETTING, BERGSTROM AFB, TEXAS

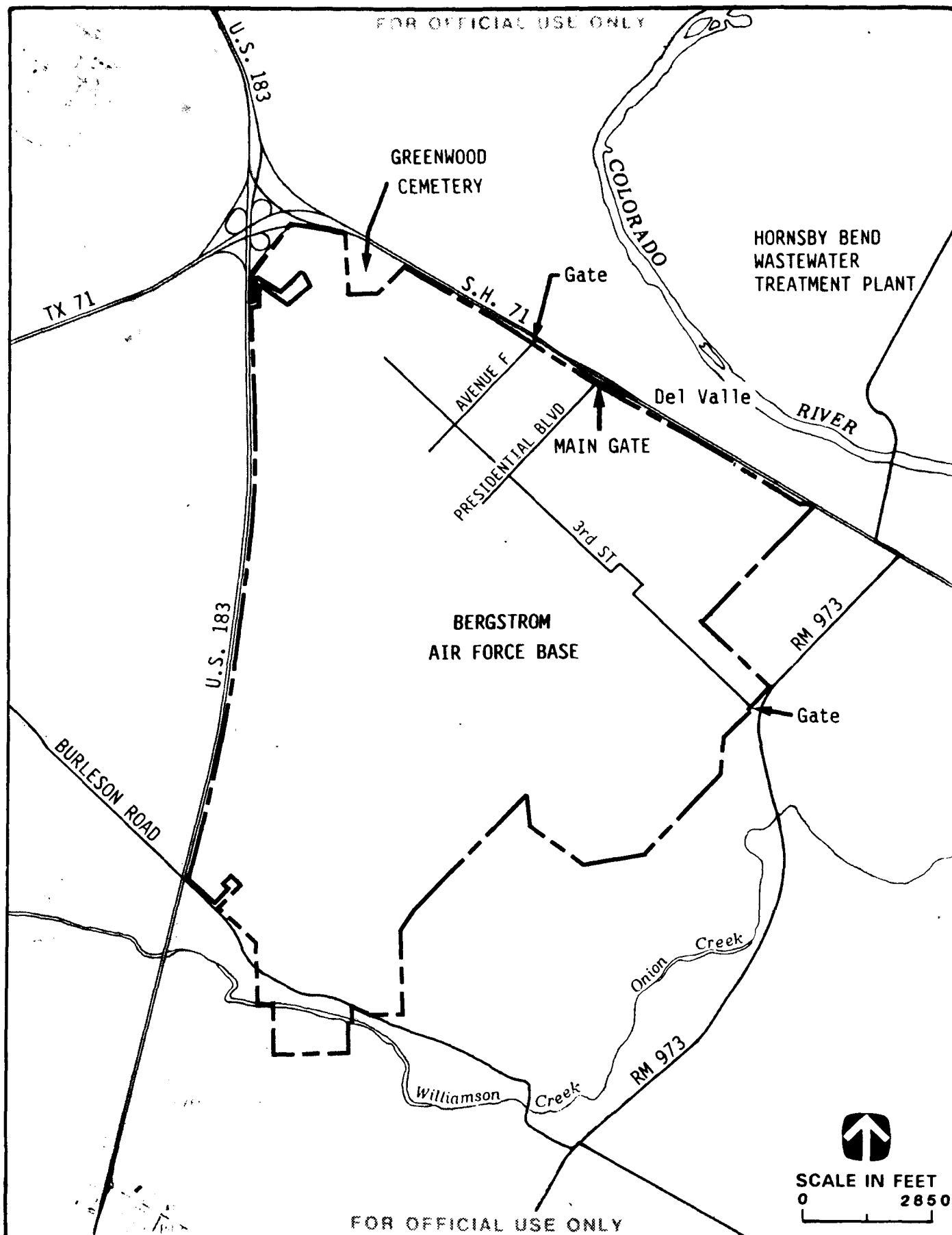


FIGURE 3.2.1-2 BERGSTROM AFB, TEXAS AND VICINITY

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The population of the City of Austin in 1980 was 345,900 and is projected to reach 532,000 in 1990. Currently, Bergstrom AFB direct personnel and dependents represents about 3.0 percent (15,700) of the 1990 estimate, with an additional 1.0 percent (6,800) related to indirect activities. Total base-related population equals about 4.0 percent or 22,500 of the 1990 population. Nearly 19,400 military retirees and their dependents live in the local area.

3.2.1.2 Housing

Military housing is provided at Bergstrom AFB for both accompanied and single personnel including 719 family units and 1,820 permanent and visiting dormitory facilities. Of the nearly 1,500 military personnel who live onbase, about 700 live in family housing with the remainder in singles' quarters.

The current housing stock in the City of Austin is estimated to be approximately 240,000 permanent units with a vacancy rate of about 8 percent. Offbase housing owned or rented by direct military and civilian personnel as well as secondary workers include about 3.0 percent of the current housing stock in the Austin area. Military retirees occupy an additional 4.8 percent of the local housing stock.

3.2.1.3 Education

Bergstrom AFB is served by the Del Valle Independent School District, which has a current enrollment of approximately 5,800 students. Approximately 800 children of military and civilian base personnel attend Baty and Hillcrest Elementary and the Junior and Senior High Schools within the district. An Adopt-A-School program providing volunteer services to school organizations is supported by several Bergstrom AFB units.

3.2.1.4 Community Services

Health care facilities at Bergstrom AFB include a 30-bed hospital and four clinics providing family practice, surgery, pediatrics, dental, and mental health services. A regional medical center is located in San Antonio, 80 miles south of Bergstrom AFB.

Bergstrom AFB personnel also actively participate in a variety of community activities and events. Bergstrom AFB employees engage in activities ranging from local government to the annual air show.

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The surrounding community also receives the benefits of volunteer help from various units at Bergstrom AFB.

3.2.2 Land Use and Aesthetics

3.2.2.1 Existing Land Use Patterns

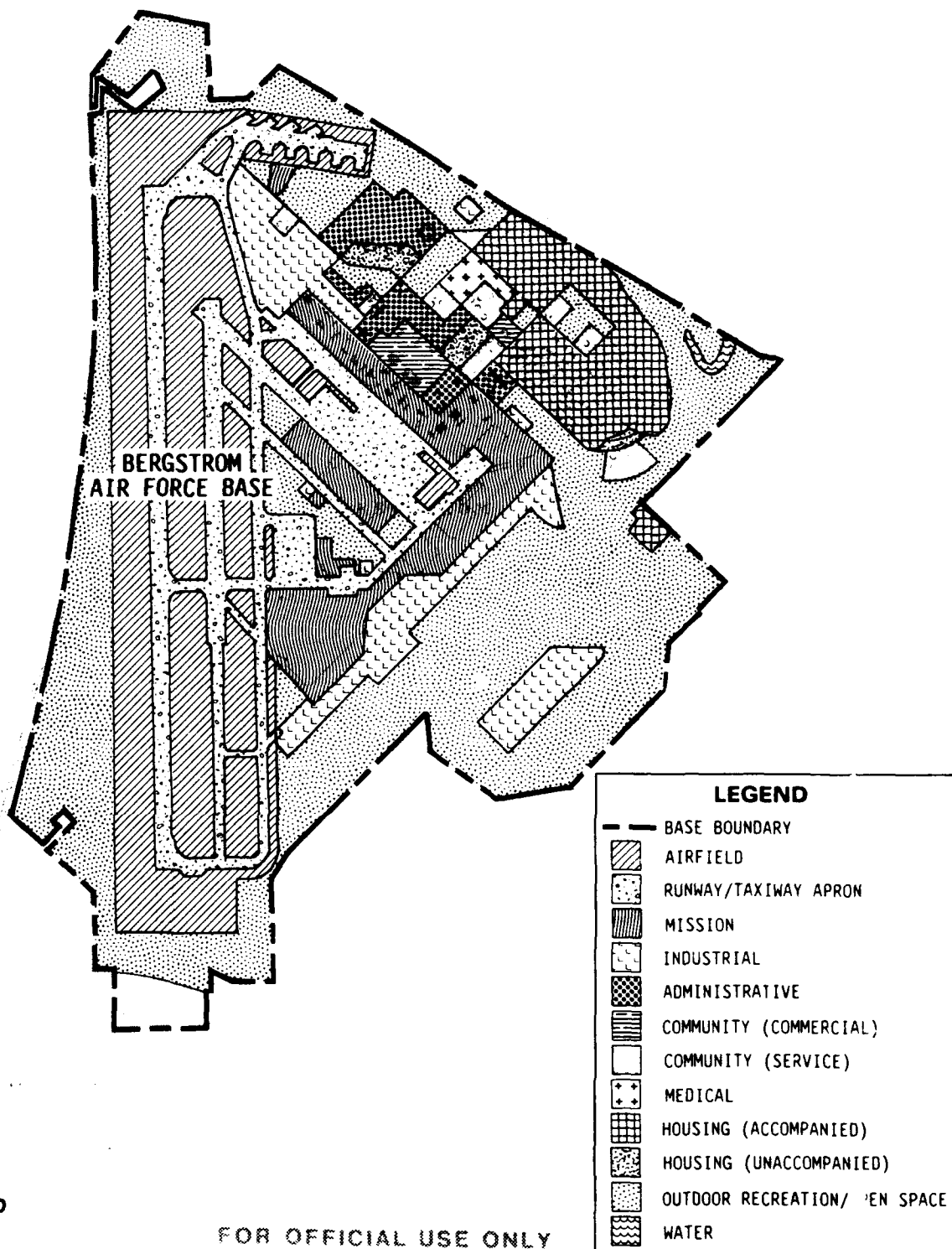
Onbase. Onbase land uses, listed below, are presented in Figure 3.2.2-1.

- Airfields, runways, taxiways, and aprons;
- Mission;
- Administrative;
- Industrial;
- Community/commercial and services;
- Medical;
- Housing; and
- Recreation and open space.

The *1989-1994 Bergstrom AFB Land Management Plan* characterizes the installation's land as approximately 25 percent improved, 21 percent semi-improved, 31 percent unimproved grounds, and 22 percent land under facilities.

An additional land use associated with the base is the recreational grounds at Lake Travis. Located approximately 40 miles northwest of the base, Lake Travis is leased from the Lower Colorado River Authority (LCRA) as part of Pace Bend County Park. The recreation area is known as "Circle B." In 1968, this property was increased from 64 acres to the current 115 acres. Fifty acres fall below the water line, providing fishing, boating, and water skiing opportunities. These facilities are open to the public and serve community organizations such as scouting troops. In addition to water sports, outdoor recreation facilities available include picnic sites and campgrounds. Relative to the proposed base closure, the lease provides a cancellation clause, and the LCRA may therefore find an alternative leaseholder.

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FIGURE 3.2.2-1 EXISTING LAND USE, BERGSTROM AFB, TEXAS, 1990

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Offbase. The area surrounding Bergstrom AFB lies within the City of Austin Planning Sector 18. Land use in Sector 18 is largely undeveloped and rural. Of the 52,604 acres in the sector, only 7,989 are currently developed for urban or residential uses. Immediately surrounding the base are commercial and industrial developments generally adjacent U.S. Route 183 and State Highway 71, which serve the base and the City of Del Valle. However, growth in the commercial and office markets is slow. Agricultural and undeveloped land remains the largest of all land use categories-- 84 percent of Sector 18. Sand and gravel operations are also found close to the base, north of State Highway 71 and below the Colorado River.

Residential development is also found just south of the base along F.M. 973 and continues farther south. Growth in this area is expected to expand in connection with the Moore's Crossing Municipal Utility District, located southeast of the base.

Additional land uses surrounding the base include public parks, the Travis County Detention Center on F.M. 973, and the South Austin Regional Wastewater Treatment Plant. These public land uses, including the base, make up the largest category of urban land use in Sector 18.

Existing land use patterns surrounding the base have been highly affected by compatibility with airfield operations. These concerns have been addressed in an Air Installation Compatible Use Zone (AICUZ) Study, conducted in 1985.

An AICUZ study involves an analysis of compatibility of land use around a military airfield in terms of noise and other issues such as physical obstructions to flight, types of human activities, density of houses, and concentration of persons unable to help themselves in case of an accident (i.e., handicapped, elderly, and infants). As a result of an AICUZ study, noise contours and accident potential zones are developed, which are used in developing a breakdown of the area surrounding the airfield into categories of allowable land use. This categorization of the land around an airfield is then made available by the Air Force to the civilian authorities with the purpose of promoting zoning and other types of regulations which can effectively control undesirable growth around the airfield.

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The delineation of Clear Zones (CZ), Accidental Potential Zones 1 (APZ 1), and Accident Potential Zone 2 (APZ 2) (Figure 3.4.4-1, Section 3.4.4) is an integral part of the AICUZ process, and together with the noise contours define the overall compatibility of land use around the airfield. Given a certain combination of noise level and airfield safety criteria, certain land uses are compatible, conditionally compatible, or incompatible. For example, a day/night sound level (L_{dn}) higher than 75 is incompatible with residential land use. A designation of APZ 1 is considered to be compatible with industrial/manufacturing, open space, recreation, and other uses that do not concentrate people in small areas. The APZ 2 designation is compatible with the same uses as APZ 1 as well as low-density single-family residential, business, and commercial retail uses. Buildings for most nonresidential uses should be limited to one story. The compatibility of land uses with aircraft operations has been defined as Compatible Use Districts (CUD). The CUD is an area that possesses a distinct range of noise levels and specific accident potential. There are 13 basic CUDs in the AICUZ criteria. Ten of these CUDs apply to the Bergstrom AFB AICUZ. Incompatible land uses are limited around Bergstrom AFB. North and west of the airfield are residential and mixed use areas that are conditionally compatible. The residential area southwest of the U.S. 183 and State Highway 71 is incompatible. Residential areas north of the airfield are designated incompatible because of high decibel levels and are located in APZ 1 and APZ 2 zones. There are not as many conditionally compatible residential uses south of the base, and no incompatible residential uses. There are only two uses that fall into the incompatible designation south of the base: a conservation/preservation area and an industrial use. Air Force Regulation (AFR) 86-14 establishes height and obstruction criteria. Under AFR 86-14, obstructions to air navigation are defined as an existing object (including a mobile object) or a future object:

- That exceeds 500 feet above ground level;
- That exceeds 200 feet above ground level within 3 nautical miles of the established reference point of an airfield;
- That would impact existing or proposed airport approach/departure procedure;
- That would be an obstacle to enroute navigation; and
- That intrudes upon the surface of a takeoff and landing area of an airfield or any imaginary surface.

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05/21/90**3.2.2.2 Land Use Policies and Plans**

Current ownership of the base proper extends over approximately 4,000 acres, including all clearance areas, restricted areas, and leased property. Approximately 2,900 acres were included in the original acquisition. These acres are considered fee property; that is, the federal government holds title to the land and enjoys all rights to use and improve the property. However, the City of Austin holds an equity interest in this property because a city bond issue financed the original purchase. At this time, the extent of that equity interest is not clear (which party would have interest in the property itself and the improvements made on it). In addition, approximately more than 300 acres have been purchased by the government; the city has no equity interest in any of this land. Easements on Bergstrom AFB total approximately 690 acres.

Land use goals for the base emphasize improved consolidation of buildings by function, for efficiency, and compatibility. Proposed capital improvements include upgrading infrastructure (roads and utility systems), increasing the parking supply, improving landscaping, and facilitating traffic flows onbase. For FY 1989, total construction expenditures stand at \$12.9 million. Capital improvements are identified in the "Bergstrom 2000" Report where projects both completed and underway have been identified. The capital improvements projects currently underway will be completed. Construction projects not yet begun have been put on hold pending the decision whether or not to close the base. At this time, there appear to be no plans prioritizing capital improvement continuation or termination in relation to the proposed base closure action.

The most recent comprehensive planning effort by the City of Austin was conducted in 1986. The effort resulted in a series of Austin plan documents covering land use, the environment, economic development, and housing.

3.2.2.3 Zoning and Other Regulations

Bergstrom AFB lies entirely within Austin's extraterritorial jurisdiction (ETJ) in the City of Austin Planning Sector 18. This area is inside the city limits and all areas falling outside the city's jurisdiction are governed by Travis County. There is no county zoning dictating land use in these areas. The base is considered Unzoned or exempt from the Austin Zoning Ordinance. The ETJ

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extends 5 miles from the full purpose corporation limits, and the only land use regulation affecting the ETJ is the subdivision authority.

The primary zoning immediately surrounding the western, southern, and eastern boundaries of the base is considered Development Reserve. This category is intended to prevent premature land uses/development for which adequate public services and facilities are unavailable. This corresponds to the largely undeveloped nature of the area and the incompatibility of many land uses with the base. The northern end of the main runway includes land zoned commercial, residential, and small business, as well as a cemetery.

3.2.2.4 Aesthetics and Visual Resources

The Architectural Compatibility Guidelines for the base state that "clean, massive, handsome buildings without overly busy detailing are the objective." The style best describing the buildings on base is contemporary/modern. The emphasis of these guidelines is to promote compatibility of styles and functions, durability of material, and efficiency.

Five basic functional areas are considered in the guidelines: administrative/community services/dormitories; operations/ maintenance; support/industrial; mobility; and family housing. At the base, structural form follows function.

The structural detailing and materials of base buildings are modest. Fascia are composed of brick and precast on permanent buildings. Industrial and temporary buildings are generally of pre-engineered metal. Paint used on structures in Categories 1 through 4 is "Bergstrom Nomad Tan" with dark brown graphics and trim. The exceptions to this color scheme are the military family housing structures, which more closely resemble an offbase residential subdivision in style and layout.

Landscaping considerations at the base emphasize minimal maintenance and climate compatibility. The *Land Management Plan (1989-1994)*, prepared by the Base Civil Engineers, details the base's land resource maintenance programs. The goals of the plan work toward enhancing the natural and built environment, protecting natural resources, and maintaining compatibility with base missions.

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3.2.3 Transportation

3.2.3.1 Transportation Systems

Roads. Major road facilities that pass through the Austin metropolitan area are Interstate 35, State Highway 71, and U.S. 183. Two of the major roadways provide direct access to Bergstrom AFB and would reflect any reduction in travel volume associated with the relocation of workforce or closure of Bergstrom AFB. These roadways are U.S. 183 and State Highway 71 (see Figure 3.2.1-2).

The base has two active gates. The main gate is on State Highway 71 at Presidential Boulevard. The second gate is approximately 1,600 feet west of the main gate also on State Highway 71. The second gate enters the base at Avenue F. A third gate is located on 3rd Street on the southeast side of the base and is used infrequently.

Railroads. Two rail freight companies provide access to the Austin market. They are the Missouri Pacific and the Austin and Northwestern railroads. A portion of the Missouri Pacific right-of-way terminates at the western boundary of the base. The Austin and Northwestern right-of-way travels through Austin and passes closest to Bergstrom just north of Lake Austin. Amtrak does not provide passenger service to Austin.

3.2.3.2 Ground Traffic

Bergstrom AFB is approximately 7 miles southeast of Austin's Central Business District (CBD) in Travis County, Texas. Typically, the journey-to-work travel time for the Austin Metropolitan Statistical Area (MSA) is 41.8 minutes. Freeway traffic is considered very heavy during peak travel conditions. Traffic flow conditions overall in the Austin region are considered to have reasonably free-flow operations with slight impacts on maneuverability during peak periods.

U.S. 183 has a segment with a bidirectional average daily traffic volume (ADT) of 41,768 trips north of Bergstrom AFB; the ADT drops off to 18,661 trips south of the base (Table 3.2.3-1). The level of service (LOS) ranges from B to A in these locations, respectively. The segment that provides the least desirable LOS is the Montopolis Bridge segment with 56,992 trips. The expected capacity is 46,500

Table 3.2.3-1

Existing Level of Service, Roadways
in the Vicinity of Bergstrom AFB

Roadway	Location	1990 ADT Volume (Estimated)	1990 Capacity (ADT)	V/C Ratio	LOS
U.S. 183	South of State Highway 71	18,661	46,500	0.40	A
	South of Thompson Street	41,768	69,750	0.60	B
	East of Airport Boulevard	28,114	46,500	0.60	B
	Montopolis Bridge	56,992	46,500	1.23	F
State Highway 71	East of U.S. 183	51,857	46,500	1.12	F
	East of Interstate 35	48,473	50,000	0.97	E
U.S. 290/State Highway 71	West of Interstate 35	52,302	49,500	1.06	F

Notes: ADT = Average Daily Traffic

V/C Ratio = Volume-to-Capacity Ratio

LOS = Level of Service -

A = Free-flow operations: high average speeds and unimpeded maneuverability (V/C ratio 0.40).

B = Reasonably free-flow operations: above average speeds and slight impacts on maneuverability (V/C ratio 0.41 - 0.55).

C = Stable operations, typically meets design standards: some speed restrictions as a result of congestion and noticeably restricted freedom to maneuver (V/C ratio 0.56 - 0.75).

D = Borders on unstable flow: speeds reduced by congestion and severely limited freedom to maneuver (V/C ratio 0.76 - 0.70).

E = Extremely unstable flow: virtually no usable gaps in the traffic stream to maneuver from one lane to another without causing disruption to traffic flow (V/C ratio 0.91 - 1.05).

F = Forced or breakdown flow: intermittent traffic stoppage in a lane and queues behind breakdown points (V/C ratio 1.06+).

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vehicles per day with an LOS of F. State Highway 71 has 48,473 trips east of Interstate 35 and west of the base. However, the segment of State Highway 71 east of U.S. 183 has 51,857 trips. This volume also exceeds capacity and performs at LOS F. These two locations access to the site.

3.2.3.3 Air Traffic

Airports. The Robert Mueller Municipal Airport is approximately 7 miles north of the base and is the closest commercial aviation terminal. Mueller Municipal has 10 resident airlines with 105 flights departing daily. According to Federal Aviation Administration (FAA) standards, Mueller Municipal is classified as a small hub airport. The airport can be reached from the base via the most direct major routes of State Highway 71, U.S. 183 and Airport Boulevard/Loop 111.

Airspace Management. Airspace at the base is constrained by the airfield's proximity to Robert Mueller Airport, which creates overlapping Air Traffic Control Zones as well as encroachment from heavily populated areas around the base. Operations are coordinated with the FAA, and flight paths are controlled to minimize conflicts with civilian aircraft operations in the Austin area. Flight corridors have been selected to minimize community disturbance.

Jet aircraft conduct almost 270 operations per day from Bergstrom AFB on the average. An operation is defined as either a takeoff or landing. Ninety percent of these operations are jet fighter aircraft, with only 10 percent transient aircraft.

There are 13 airports within the Austin Approach Control Area--12 civil airports and Bergstrom AFB, which is military. Seven of the airports--Mueller, Austin Executive, Lakeway, Georgetown, Lago Vista Bar-K, San Marcos, and Bergstrom AFB--have published instrument approach procedures (Figure 3.2.3-1). Mueller, San Marcos, and Bergstrom AFB each have at least one precision landing aid (ILS or PAR), and the remainder have nonprecision navigation aids (NAVAIDS). The latter operate primarily under visual flight regulations (VFR), although departures may be made during instrument weather conditions.

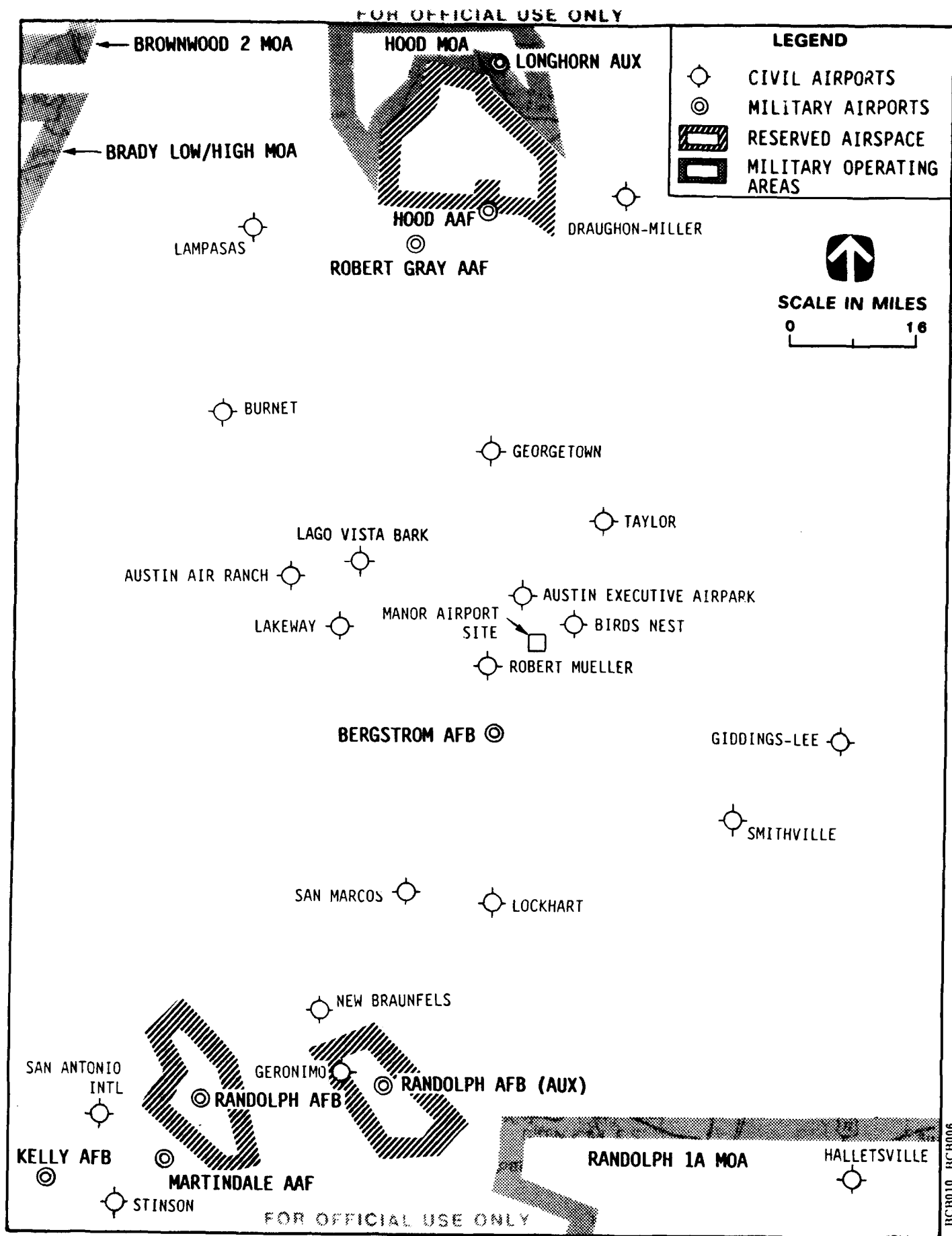


FIGURE 3.2.3-1 AIRPORTS AND AIRSPACE SURROUNDING BERGSTROM AFB, TEXAS

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Approach control and airport traffic control facilities include the Austin Approach Control Facility, located at Robert Mueller Airport, and Airport Traffic Control Towers at Robert Mueller Airport and Bergstrom AFB.

The Austin airspace can be characterized as complex because of the proximity of Bergstrom AFB to Robert Mueller Airport and the respective runway orientations at those two facilities. Austin Approach Control has jurisdiction of the airspace, as stated in a letter of agreement with Houston Air Route Traffic Control Center. An Airport Radar Service Area (ARSA) has been established at Robert Mueller Airport that provides radar vectoring and sequencing for all VFR and Instrument Flight Rule (IFR) aircraft landing within, taking off from, or overflying the airspace.

There are five military operations areas (MOAs) to the northwest of the Austin area. The MOAs are blocks of airspace delegated by the FAA for use by military aircraft training purposes. The majority of air traffic from Bergstrom AFB is to/from these MOAs, through the Austin ARSA. The MOAs also affect IFR traffic into and out of the Austin area.

Air Traffic Safety. Military aircraft from the base use nonstandard patterns, steeper approaches, and higher pattern altitudes in an effort to minimize potential conflicts with civilian air traffic and impacts upon the community. Landing aircraft approach the airfield from the south whenever weather conditions permit in order to minimize air traffic and noise intrusion to the north. In addition, normal flight operations are limited to 6 days per week and further restricted to the period between 6:30 A.M. and 10:30 P.M.

The majority of base traffic is to and from the MOAs located northwest of Austin. This MOA traffic and traffic for Robert Mueller Airport traverse common airspace, with Bergstrom AFB departures cleared to 4,000 feet and Mueller inbound traffic held at 5,000 feet until they are clear of each other. Commercial airliners, scheduled commuters, and all types of general fixed-wing and rotorcraft comprise the civil air traffic.

Radar approach control and Bergstrom AFB precision approach control are used to ensure that pilots comply with established glide slopes to the north and with local pattern approach altitudes. Where controller techniques/procedures cannot resolve individual conflicts, depending upon traffic volumes

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and routings, the two traffic flows must be on a one-for-one basis. No simultaneous operations are possible for north-flow operations. The base tower may have automatic, independent releases for departures during south flow operations, away from Mueller traffic. When at altitude, the military traffic is then vectored to the MOAs or onto an airway. During VFR conditions, Bergstrom AFB traffic can make VFR approaches to the airfield, independent of Mueller traffic. However, IFR traffic flows into the base must be sequenced with Mueller departures.

Aircraft assigned to Bergstrom AFB use reduced power settings and airspeeds during departures from the base, climbing to the highest assigned altitudes as quickly as possible to mitigate noise impacts. Certain flight training activities have been shifted to an auxiliary airfield to minimize aircraft operations in the Austin area.

Bird/aircraft strike hazards are present in the vicinity of the base from a city landfill located within 5,000 feet of the base to the south. Base and city officials have developed operating procedures to mitigate the bird/aircraft strike problems.

3.2.4 Utilities

3.2.4.1 Water Supply

The base's water is supplied through the City of Austin's water treatment system. Austin currently operates plants with a combined water supply capacity of 225 million gallons per day (MGD). The total water pumpage for the City of Austin for FY 1989 was 38.3 billion gallons. The Green Water Treatment Plant, which supplies the base, has a capacity of 45 MGD. The total water pumpage for the Green Water Treatment Plant for FY 1989 was 9.0 billion gallons. In 1989, Bergstrom AFB recorded a total water usage of 338,487,000 gallons, which is less than 1 percent of the total water usage for Austin, and approximately 4 percent of the Green Water Treatment Plant pumpage. The city is in the process of improving its water mains in the southeast area of Travis County. Water pressure in this area is derived by the pilot knob reservoir, which is located 720 feet above mean sea level (MSL). The elevations at the base range from 470 feet to 541 feet above MSL. This will supply the base with sufficient water pressure for fire protection.

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05/21/90**3.2.4.2 Wastewater Treatment**

The Austin wastewater treatment system, which serves the base, currently consists of three treatment plants and one combined sludge storage and treatment facility. The total combined wastewater treatment plant capacity for Austin was projected to be 120 MGD. The total wastewater treated for the City of Austin in FY 1989 was 22,878,797,000 gallons (Table 3.2.4-1). The Hornsby Bend sludge storage and wastewater treatment plant currently services the base and has a peak capacity of 2.5 MGD. The total wastewater treated by the Hornsby Bend plant in FY 1989 was 256,466,000 gallons (Table 3.2.4-1). In 1989, the base recorded a wastewater output of 192,113,000 gallons, which is less than 1 percent of the total usage for the City of Austin and 75 percent of the Hornsby Bend plant. Plans are currently under review to phase out the Bergstrom AFB contribution to the Hornsby Bend Treatment Plant. A final determination by the City of Austin has not been made. If the plans to phase out the Bergstrom AFB contribution to Hornsby Bend are implemented and the base remains open, then the South Austin Regional Wastewater Treatment Plant (with a capacity of 40 MGD) would receive wastewater flows from Bergstrom AFB.

Table 3.2.4-1**Wastewater Usage, Bergstrom AFB and Vicinity
(in 000s)**

	City of Austin	Hornsby Bend Treatment Plant	Bergstrom AFB
Total Gallons	22,878,797	256,466	192,113
Percentage of total city usage	100%	1%	1%
Percentage of Hornsby Bend Plant	--	100%	75%

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05/21/90**3.2.4.3 Solid Waste**

Bergstrom AFB generates 9,600 tons of solid waste and spends \$353,657 annually for a private contractor, Central Texas Refuse Corporation, to haul that waste to the Austin City Landfill, 4 miles south of the base. This landfill has 10 years of capacity remaining. The base solid waste management program, managed by the 67th CES/DEEC, is operated in compliance with all local, state, and federal laws and regulations. The base has initiated a recycling program managed by Morale, Welfare, and Recreation to recycle cardboard, tires, batteries, aluminum cans, and paper. Scrap metals, textiles, tires, and waste oils are recycled by the Defense Reutilization and Marketing Office (DRMO).

3.2.4.4 Energy

The Valero Transmission Company (VTC) currently supplies natural gas service to the base. VTC functions as a gas supplier, not a gas distributor. As a supplier, VTC does not construct or provide financial assistance for internal distribution lines.

VTC currently supplies the base with gas via a 4-inch diameter service line that originates from a 20-inch transmission main approximately 4.5 miles from the base. In 1989, the base used a total of 176,020 million cubic feet of natural gas.

Two additional gas companies, Southern Union Gas and Lone Star Gas, are potential suppliers to the base. Southern Union Gas maintains a 6-inch gas line adjacent State Highway 71 and the base. This line was used at one time to supply the base. Lone Star Gas maintains a 20-inch gas main approximately 1.5 miles east of the base. In the case of base reuse, Lone Star Gas would be willing to construct the supply and distribution lines necessary to serve the site.

Electrical service to the base is supplied by the City of Austin. Natural gas is the fuel source for this utility. The base is served by two 30 megavolt-ampere (MVA) transformers north of the base. The base places a load of approximately 15 MVA of the total 20 to 25 MVA carried by those two transformers. In 1989, the base used a total of 65,383,800 kilowatt-hours.

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Total generating capacity for the entire Austin service area was 1,906 megawatts (MW) in 1986. This capacity was expected to increase to 2,132.2 MW in 1988 in order to meet demand. Peak demand of wattage volume is projected to increase 6.6 percent annually until 1995. Existing generating facilities are capable of maintaining capacities until 2000. However, transmission capabilities are in need of upgrading, including lines and substations.

3.3 HAZARDOUS MATERIALS

3.3.1 Hazardous Waste Management

The major industrial operations at the base generate waste oils, contaminated fuels, spent solvents and cleaners, and waste paint materials. The total amount of waste generated is 50,000 to 75,000 gallons annually.

The base is currently operating its hazardous waste program as a large quantity generator under interim status and is required to comply with Resource Conservation and Recovery Act (RCRA) hazardous waste regulations established by the Environmental Protection Agency (EPA) and administered by the Texas Water Commission under Texas Administrative Code 335.

The majority of hazardous waste generated at the base is petroleum products, Type 140 solvents, hydraulic fluids, and lubricating oils. Other waste generated in significant amounts includes contaminated rinse water, paint waste, paint sludge, used paint arrestor filters, fluorescent dye penetrants, and various halogenated and nonhalogenated solvents.

The *Management of Hazardous Waste Plan 19-1* has been developed to establish specific policies and responsibilities for the management of hazardous wastes at the base. Plan 19-1 is based on a series of *Defense Environmental Quality Program Policy Memorandums (DEQPPM)* designed to comply with state, federal, and local regulations. The plan adopts the "cradle to grave" goals of the EPA and directs the systematic control of the collection, separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous wastes at the base. The primary goals of the plan are to provide guidance and directives for waste minimization.

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3.3.2 Installation Restoration Program Sites

The DEQPPM 81-5 directs the Department of Defense (DOD) to identify and evaluate suspected problems associated with past hazardous material disposal sites on federal installations; to control migration of hazardous contamination; and to control hazards to human health and the environment. The Installation Restoration Program (IRP) was initiated to implement that DOD policy and to comply with RCRA of 1976, Sections 6001, 6003, and 3012, and to provide a basis for remedial actions under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended under the Superfund Amendments and Reauthorization Act (SARA) of 1986 and Executive Orders 12316 and 12580.

Phase I of the IRP was conducted in 1983 to review past and present industrial operations and the past management practices regarding the use, storage, treatment, and disposal of hazardous material at the base. Twenty-six disposal or spill sites were identified and evaluated for the potential contamination of hazardous materials and for the potential of hazardous material migration from the disposal or spill sites.

Eleven sites were recommended for IRP Phase II remedial investigation and feasibility study. Field studies were conducted on these sites to collect the necessary data to determine the magnitude, extent, and possible directions of contaminant migration. Table 3.3.2-1 lists 26 disposal/spill sites at the base. The IRP sites recommended for further study in Phase II are shown in Figure 3.3.2-1.

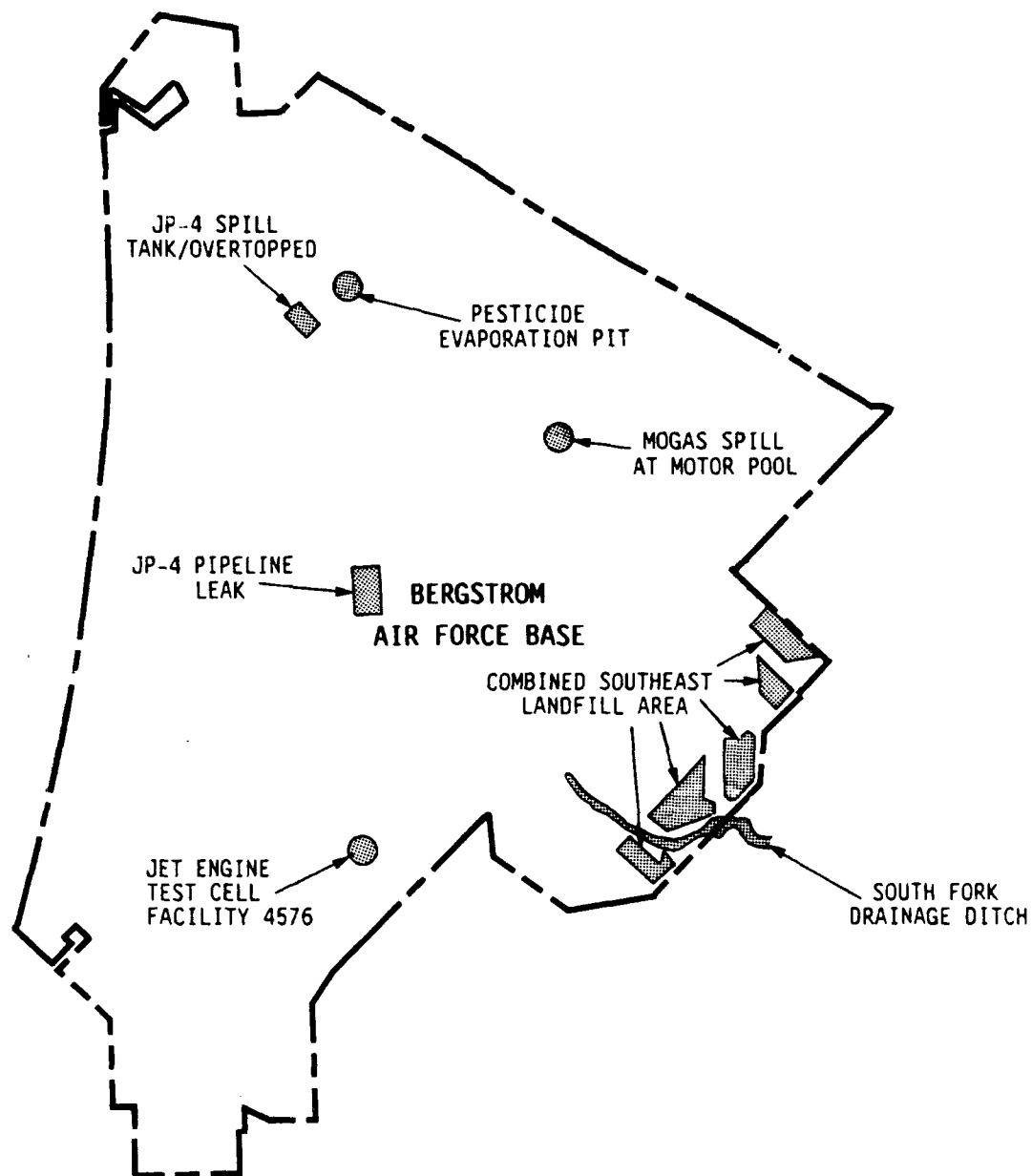
Combined Southeast Landfill Area. Landfill areas 3 through 7 comprise 51 acres and are located along the southeastern boundary of the base. They are grouped together as a single disposal area. Each of these landfills was operated for 4 to 7 years during 1952 to 1980. Predominantly domestic solid waste and construction rubble were disposed of in these landfills. Some pesticide containers, paint cans, waste paints, thinners and strippers, and spent solvents were also disposed of in the landfills. Seven 55-gallon drums containing DDT were found at landfill 6. During the IRP Phase II-Stage II investigations completed in 1989, six monitoring wells were installed to a depth of 50 feet. Sediment, surface water, and groundwater samples were analyzed; trace amounts of petroleum hydrocarbons, arsenic, 1, 2-dichloroethane, 1, 1-dichloroethene, and trichloroethylene were found.

Table 3.3.2-1

Summary of Potential Hazardous Waste Sites

Site	Site Description	Size of Impact Area	Recommended for Phase II Study
1	Landfill Site 1	2 acres	No
2	Landfill Site 2	16 acres	No
3	Landfill Site 3	10 acres	Yes
4	Landfill Site 4	10 acres	Yes
5	Landfill Site 5	12 acres	Yes
6	Landfill Site 6	12 acres	Yes
7	Landfill Site 7	7 acres	Yes
8	JP-4 Fuel Spill/Overtopped Tank	2,000-8,000 gallons (JP-4)	Yes
9	JP-4 Fuel Spill/Pipeline	200-300 gallons (JP-4)	Yes
10	JP-4 Fuel Spill/Faulty Valve	950 gallons	Yes
12	Dibrom/Diesel Spill at golf course	50:1.5 gallons:quart (Diesel:dibrom)	No
13	MOGAS spill at Motor Pool Area	1,600-3,200 gallons (MOGAS)	Yes
14	Road Oiling Area	4,200 gallons (waste oil)	No
15	JP-4 Fuel Spill/Apron excavation	1,400 gallons (JP-4)	No
16	JP-4 Spill/Refueling Truck	unknown (JP-4)	No
17	South Fork Drainage Ditch	26,000-36,000 gallons (JP-4)	Yes
18	JP-4 Fuel Spill/Fuel Systems Repair Shop	2,000 gallons (JP-4)	No
19	JP-4 Fuel Spill/Fuel Tank	200 gallons (JP-4)	No
20	Fuel Tank Jettison Area	75 acres (JP-4)	No
21	Old Entomology Rinse Area	unknown (pesticide)	Yes
22	Sludge Weathering Pit	unknown (AVGAS-JP-4)	No
23	Fire Department Training Area	unknown (waste fuels)	Yes
24	Radioactive Waste Disposal Site	unknown (Radium)	
25	Asphalt Primer Spill/Avenue F	runoff (Asphalt Primer)	No
26	Asphalt Primer Spill/Star Drive	runoff (Asphalt Primer)	No
4576	Jet Engine Test Cell	unknown (JP-4)	Yes

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LEGEND



BASE BOUNDARY

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Source: Radian Corporation, 1989.



SCALE IN FEET
0 2850

**FIGURE 3.3.2-1 INSTALLATION RESTORATION PROGRAM (IRP) SITES,
BERGSTROM AFB, TEXAS**

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Site 17 - South Fork Drainage Ditch. Site 17 is an open drainage system that begins near Building 4602 and runs between landfills 6 and 7. From 1943 to 1982, 650 to 900 gallons per month of JP-4 fuel were inadvertently released into the ditch from an overloaded oil and water separator. Another oil-water separator was installed in 1981. The South Fork drainage ditch serves as conduit for overland runoff to Onion Creek and experiences continuous water flow only during periods of heavy rain. During the IRP Phase II-Stage II studies, petroleum hydrocarbons, phenols, and heavy metals were detected in the drainage ditch sediments.

Site 13 - Motor Gas Spill. Site 13 is located in the motor pool vehicle fueling area at the intersection of 3rd Street and Avenue B. Periodic episodes of motor gas (MOGAS) spills occurred during 1974 to 1978. Approximately 25 to 50 gallons of MOGAS were spilled per incident, or 1,600 to 3,200 gallons over 4 years. No attempts were made to recover the spilled MOGAS as it soaked into the gravel-covered ground. The episodic spills ceased in 1978 when a faulty adaptor was replaced. During the IRP Phase II-Stage II investigations, evidence of soil and groundwater contamination from heavy metals, petroleum hydrocarbons, benzene, and ethylene benzene was detected.

Site 8 - JP-4 Spill/Overtopped Tank. Site 8 is located in the Petroleum, Oil, and Lubricants (POL) bulk storage area (Tank 513). In 1975, 2,000 to 8,000 gallons of JP-4 fuel were spilled and soaked into the gravel base. During the IRP Phase II-Stage II investigations, evidence of soil and groundwater contamination from petroleum hydrocarbons, ethyl benzene, heavy metals, total xylenes, and 1, 3-dichlorobenzene was detected.

Site 9 - JP-4 Pipeline. Site 9 is located near the base Flight Control Tower. In 1984, a pipeline break was detected during routine testing of the gas line. During the IRP Phase II-Stage II investigations, evidence of petroleum hydrocarbon, ethyl benzene, total xylenes, and heavy metal contamination was detected in the soil and groundwater.

Site 21 - Pesticide Evaporation Pit. Site 21 is located adjacent Facility 724 in the northern sector of the base. Until 1973, the concrete evaporation pit was used to rinse pesticide containers. Unknown quantities of pesticides soaked into the surrounding ground. During the IRP Phase II-Stage II investigation, soil samples were found to contain petroleum hydrocarbons, prometon, heptachlor epoxide, and arsenic to depths of 15 feet. Groundwater samples were not taken.

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Facility 4576 - Jet Engine Test Cell. The jet engine test cell located in Facility 4576 is located near the intersection of Taxiways 7 and 9. Water was sprayed for air pollution control and noise suppression during test firing activities. Contaminated water was inadvertently routed to an open drainage ditch when an inadequate oil and water separator overflowed. The oil and water separator was replaced with a larger one in 1988. During the IRP Phase II-Stage II investigation, trace amounts of total petroleum hydrocarbons were detected in the soils. Groundwater samples were not taken; however, the groundwater samples from nearby monitoring wells showed trace amounts of trichloroethene.

Site 23 - Fire Department Training Area. Site 23 was used to conduct fire department training exercises. Prior to 1972, recovered fuels, commingled waste oils, and spent solvents were stored in 55-gallon drums. At times, up to 50 drums were stored at the facility. These drums and recovered fuels were emptied into an unlined burning pit, ignited, permitted to burn for 30 seconds, and extinguished. From 1972 to 1982, only JP-4 fuel was used during training exercises and until it was used, the JP-4 fuel was stored in an aboveground storage tank. During training exercises, the JP-4 fuel was drained by gravity flow lines into the water saturated pit prior to ignition. Aqueous film forming foam was used to extinguish these fires. Since 1982, the pit has been enlarged, regraded, and fitted with a limestone base. A water drafting pit and oil and water separators have been installed to receive runoff. On the basis of the results and recommendations of the IRP Phase II-Stage I investigations, a Phase IV-A Remedial Action Plan and Conceptual Documents were initiated and performed under contract in 1988.

The IRP Phase II-Stage II investigations recommend the continued monitoring and additional field investigations to determine the source, mobility, toxicity, and volume of detected contaminants for all sites. Additional information is needed to evaluate the risks associated with each contaminant to human health and the environment. All sites have the potential for impact on human health and the environment, and remedial actions are called for. However, additional information is required before selecting the most appropriate remedial action.

3.3.3 Hazardous Materials Storage and Handling

Base operations that generate hazardous wastes are responsible for minimizing the amount of hazardous waste generated and supervising and completing the manifests for transport, storage, and

disposal to a satellite accumulation point. Hazardous waste stored at satellite accumulation points is removed to the Interim Hazardous Waste Storage Area (IHWSA) facility within 3 days. The base operates the IHWSA under an interim RCRA permit and has applied for a finalized RCRA Part B permit to store hazardous wastes onbase. The Part B permit requires the completion of a Conforming Facility.

The IHWSA is located between Buildings 1602 and 1610. Within 90 days, the hazardous waste is removed by a private contractor and taken to an approved treatment, storage, and disposal facility (TSDF) for disposal. The DRMO prepares all contracts for disposal of hazardous waste in accordance with DEQ PPM 81-5.

IHWSA functions as a TSDF until the proposed Conforming Storage structure is completed. Completion of the new Conforming Storage facility is anticipated in 1992; at that time the IHWSA will be converted to an accumulation point management facility. Once converted to an accumulation point management facility, only fifty 55-gallon drums will be permitted there at any one time and these drums must be moved offbase or to the new storage facility within 90 days.

All hazardous waste generated at the base is taken to the IHWSA, as described above, with the exception of the hazardous waste generated by the Government-Owned Contractor-Operated Facility in Building 1608. This hazardous waste is disposed of through the DRMO and is collected and transported to a TSDF within 90 days.

The base has developed and established several plans, Plan 19-1, Plan 115, and the Underground Storage Tank (UST) Management Plan, that describe procedures, methods, training programs, and equipment needed in the event of releases, accidents, and spills involving oils and hazardous substances.

Several waste minimization projects have been established to reduce quantities of hazardous wastes generated. Waste minimization may be accomplished through recycling of spent materials, substitution of biodegradable products for hazardous materials, implementation of technological changes, silver reclamation, and segregating hazardous waste from POL waste.

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Currently, most POL waste products are separated from other hazardous wastes and collected at a central facility (Building 590). Used engine oil is sold for energy recovery provided it meets the requirements of 40 CFR 266, subparts D & E.

Only battery electrolyte wastes are treated onbase. As a standard practice, battery electrolytes are neutralized prior to being incrementally discharged into the sanitary sewer system.

At present, there is no recycling of used paint and lacquer thinners, but there are plans to install a solvent recovery system to recycle the 700 gallons of waste paint, thinner, and methyl ethyl ketones generated annually. Until the solvent recovery system is installed, used Type 140 solvents are drummed and recycled by the DRMO.

Batteries are reclaimed by a local parts and battery company. Oil and water separator wastes are collected, stored, and analyzed to determine if they may be recycled as wastewater or disposed of as hazardous waste.

3.3.4 Storage Tanks

There are 74 USTs and 25 aboveground tanks at the base. Petroleum products are stored in 43 of the USTs. Twenty USTs are designated for storage of fuel for emergency power generation, whereas only three USTs contain heating oil. A UST Management Plan has been drafted to outline an effective maintenance procedure to ensure environmentally safe and responsible management of USTs. The plan addresses current and anticipated regulatory requirements, inventory procedures, priority assessment in inventory analysis, physical testing for leaks, appropriate corrective action in the event of a leaking UST, and effective maintenance and management to reduce the potential of leaking USTs.

3.3.5 Asbestos

At present, the base has no asbestos abatement plan in effect. Areas in need of maintenance are repaired and asbestos removed as a course of regular maintenance. Large repair/asbestos abatement projects are contracted offbase. Small projects are handled onbase.

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3.3.6 Polychlorinated Biphenyls

In 1984, the base initiated a basewide remedial program to remove and replace or retrofit polychlorinated biphenyl (PCB) transformers, PCB-contaminated transformers, and PCB capacitors. The majority of articles or equipment with PCB contents in excess of 50 parts per million (ppm) have been removed under the supervision of the Civil Engineering Exterior Electric Shop.

PCB items are sealed in 17C Department of Transportation drums and stored in a concrete storage vault at the DRMO-OSB storage yard. Only two large transformers in Buildings 2700 and 1900 and ten capacitors require proper disposal at this time. Removal of the remaining PCB transformers must occur by 1 January 1992. In-service transformers are routinely inspected.

3.3.7 Radon

The Radon Assessment and Mitigation Program (RAMP) was initiated by the Air Force to determine the extent and magnitude of radon contamination in existing facilities and the level of radon exposure to military personnel and any necessary mitigation measures. Following this mandate, Bergstrom AFB conducted an initial assessment survey for radon contamination in 1987. Fifty buildings were monitored over a 3-month period. This survey identified eight buildings with radon levels greater than 4 picocuries but less than 20 picocuries. The EPA has established 4 picocuries as the lower value for potential risks and 20 picocuries as the radon level requiring immediate mitigation. These eight buildings are located in the housing area.

The findings of the initial assessment ranked Bergstrom AFB as a medium risk group that warranted more extensive monitoring to determine the extent of radon contamination. Consequently, a year-long monitoring program in 1,100 buildings was initiated in December 1989. This monitoring program will be completed in May 1991.

3.3.8 Radioactive Materials

Used and out-of-service control panels containing low-level radioactive wastes were disposed of in three closed radioactive waste cells off Burleson Road. Unknown amounts of radioactive wastes (radium) were mixed with concrete and disposed of in the cast iron underground cells and covered

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with 4 inches of concrete. To date, no radioactivity above background levels has been detected during routine inspections.

3.4 PHYSICAL ENVIRONMENT

3.4.1 Geology and Soils

3.4.1.1 Geology

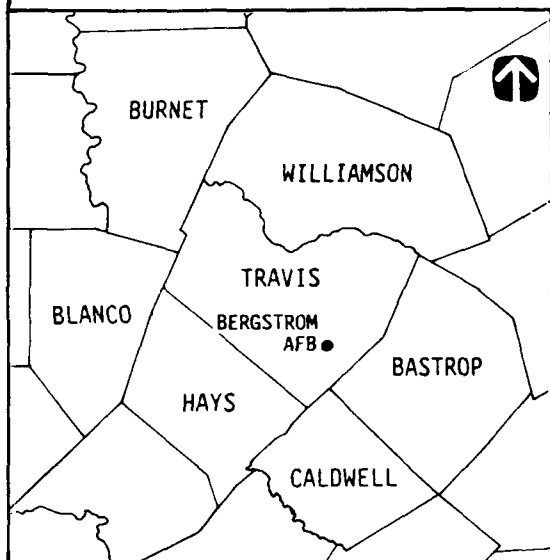
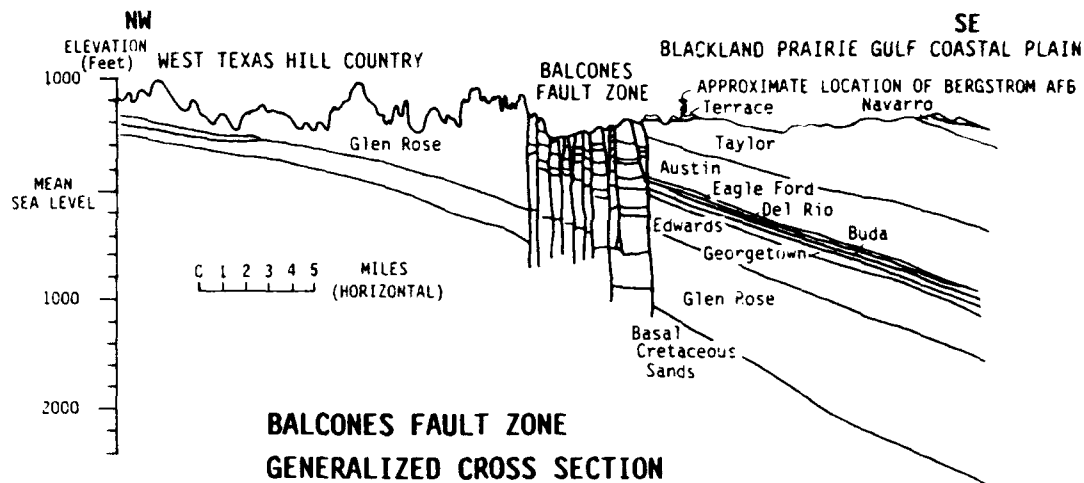
In the vicinity of Austin, Texas, the Balcones Escarpment separates the West Texas Hill Country (and the Edwards Plateau) from the Blackland Prairie of the eastern Texas Gulf Coastal Plain. The Colorado River flows southeast across the escarpment, which is the demarcation between these distinct geomorphological regions of hill country and coastal plain. The Escarpment is the western boundary of the Balcones Fault Zone and in the Austin, Texas, area the general trend of this zone is north-northeast. Bergstrom AFB is located approximately 8 to 10 miles east of the escarpment and 3 to 4 miles east of the fault zone (Figure 3.4.1-1).

The fault zone west of Bergstrom AFB is approximately 4 to 5 miles wide and is characterized by high-angle dip-slip normal faults; the major faults in the zone are downthrown to the east. In the study vicinity, the fault zone south of the Town Lake impoundment on the Colorado River has a concentration of smaller high angle dip-slip faults that are bounded by the two major faults defining the zone. This same series of concentrated faults does not extend north of the river.

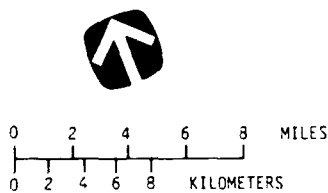
Geologic studies indicate that the Balcones Fault Zone developed during the Miocene (between 26-7 million years before present) and that there has been no fault activity since then. Bergstrom AFB is not located in a zone of seismic risk; the presence of the Balcones Fault Zone does not present a geologic hazard.

Bedrock exposures in the Austin, Texas-Bergstrom AFB area include Upper Cretaceous marine limestones, dolomitic, and clays; Tertiary Period sandy clays; and Quaternary alluviums, gravels,

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U
 D
 Fault - dashed where inferred
 U upthrown side; D downthrown side



Source: Modified from Gardner and Young, 1976.

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FIGURE 3.4.1-1 BALCONES FAULT ZONE, TRAVIS COUNTY, TEXAS

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sands, silts, and clays. Total thickness of the Cretaceous units is approximately 2,500 feet and the overall dip of these units is to the southeast, except in the fault zone, where both magnitude and direction of dips are irregular.

3.4.1.2 Soils

Soils at Bergstrom AFB developed on the alluvial terrace material. These soils have nearly level to gentle slopes (generally less than 2 percent slope), are associated with grassy vegetation, and are described as brown to red-brown, calcareous and noncalcareous sandy to clay loam and gravelly sand loam. These soils are best suited for agriculture. The soils onbase are moderately permeable and the water capacity is high. Other soil characteristics related to development include high corrosion potential and high shrink-swell potential.

3.4.2 Water Resources

3.3.2.1 Groundwater Resources

There are several aquifers located beneath Bergstrom AFB. For the purposes of discussion, they can be classified as shallow and deep aquifers. There are several deep aquifers which occupy different rock strata and only one shallow aquifer. The shallow aquifer is hydrologically isolated from the deep aquifers by an impermeable stratum known as the Taylor Marl. Although several small faults occur in this vicinity, they have little displacement and occur in thick layers of shale, which essentially seals the faults and prevent them from conducting any water vertically between the aquifers.

The primary regional aquifer is the deep Edwards aquifer. The top of this aquifer has been placed from 500 feet to 1,000 feet below the land surface. This deep aquifer occurs in the limestone, dolomite limestone, and chert modules of the Edwards Formation. It is separated beneath by the impermeable Walnut Formation, which separates it from the still deeper aquifers of the Trinity Formation. Flow through the Edwards aquifer is generally in a southeastern direction. Primary recharge occurs from direct precipitation and stream water infiltration on the outcrops, which are located in the Balcones Fault Zone northwest of Bergstrom AFB. This fault zone generally defines a water quality boundary in this aquifer. North and west of the fault zone, water quality is good and the aquifer is used as a potable water source. South and east of the fault zone, the water quality is

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generally poor due to high levels of dissolved solids; it is therefore not utilized in this area. Given that Bergstrom AFB is located downslope of the recharge area for this aquifer, the installation is isolated geohydrologically from the aquifer, and draws no water from it. The base currently has no impact on this aquifer.

In the vicinity of the base, the aquifer of most concern is the shallow aquifer in the localized, surficial alluvial and terrace deposits of Quaternary age. These deposits are up to 60 feet thick with the water table at 20 to 40 feet below the surface. Flow in the aquifer is primarily south-southeast, but is locally variable depending upon the surface of the underlying, impermeable Taylor Marl. Primary recharge of this aquifer occurs as direct precipitation on the outcrops of the deposits and percolation to the water table. The base occupies nearly all of the upland recharge area for this aquifer. Discharge from the aquifer occurs as seeps and springs to the South Fork Drainage Ditch, to Onion Creek, and to the Colorado River.

Discharge from the shallow aquifer also occurs as pumpage from numerous wells located around Bergstrom AFB. Log records exist in 19 wells in the vicinity of Bergstrom AFB and the log data have been verified by the Texas Water Commission (TWC). Nine of these wells are located downgradient from the base (south and east of the base), between Onion Creek and the Colorado River. An additional 12 wells are on record with the TWC but have not been verified; 7 of these wells are downgradient from the base. In addition to these recorded wells, a number of privately dug wells may occur which are not necessarily recorded with the TWC; that agency only maintains records of wells dug by professional well drilling companies. At least two of the recorded wells are no longer in service. One was formerly used for irrigation of the golf course, but has been abandoned in favor of using effluent from the Hornsby Bend Treatment Plant.

The primary uses of the water obtained from the alluvial aquifer are irrigation and local rural consumption. The quality of the calcium carbonate water from these wells is considered poor due to elevated levels of total dissolved solids, hardness, and alkalinity. In addition, it exceeds EPA drinking water standards for iron, sulfate, chloride, nitrate, and manganese.

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3.4.2.2 Surface Water

The major surface hydrologic feature in the vicinity is the Colorado River. The Hornsby Bend of the river passes within 1,400 feet of the northeastern base boundary (Figure 3.4.2-1). The Colorado River is impounded upstream of Bergstrom AFB in two places, to create Lake Travis and Lake Austin. Lake Travis serves as the primary source for drinking water and recreation for the city. Bergstrom AFB also receives drinking water from the Colorado River by purchasing it from the city.

The entire installation is within the Colorado River drainage basin. Stormwater runoff is collected in storm sewers and drainage swales and directed to the river, mostly by way of three tributaries. The largest of the three tributaries is Onion Creek. The creek flows mostly south and east of the base, but a 3,000-foot length of the creek crosses the southernmost point of the base. This perennial stream drains a large area west and south of the base, including developed and agricultural lands and the McKinney Falls State Park.

Approximately 70 percent of the base drains to Onion Creek. The area south and west of the runway drains to Burleson Creek, which extends north along the western side of the runway and discharges into Onion Creek where it passes through the base. Drainage from much of central and eastern sections of the base, including most of the airfield and industrial support facilities, is directed toward the South Fork Drainage Ditch, which follows an alignment along the eastern border of Bergstrom AFB and enters Onion Creek approximately 1,400 feet from the base boundary. Both of these smaller streams are intermittent and their flow is highly dependent upon stormwater runoff.

The northeastern portion of the base, including the military family housing facilities, drains to a small, intermittent, unnamed tributary to the Colorado River, which exits the base beneath State Highway 71 and enters the river approximately 1,300 feet to the north.

Carson Creek originates west of the base and flows north and east to the Colorado River; it does not cross the base. The vast majority of the Carson Creek watershed is the agricultural and developed lands north and west of the base, on the opposite sides of elevated State Highway 71 and U.S. 183. Only drainage from the northernmost portion of the base, which is largely open field and grazing area, is directed beneath State Highway 71 to tributaries of Carson Creek.

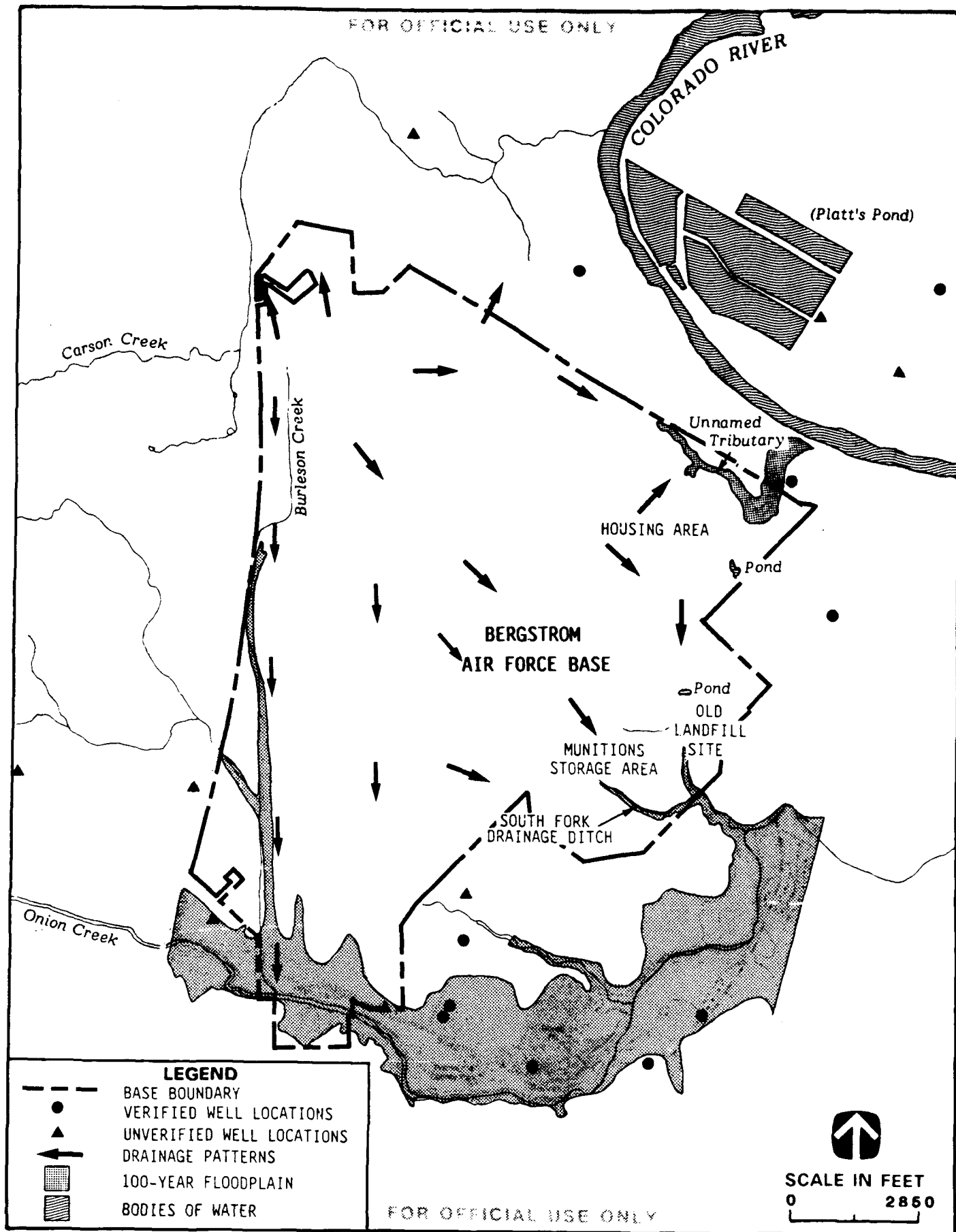


FIGURE 3.4.2-1 SURFACE WATER DRAINAGE AND WELLS, BERGSTROM AFB, TEXAS

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Runoff from a small central section along the northern border of the base (including offices, fueling, and other industrial areas) is collected and discharged to the Colorado River via a 2,700-foot long, man-made drainage ditch.

The 100-year floodplain onbase has been delineated by the Federal Emergency Management Agency and the Army Corps of Engineers. The 100-year floodplain is wide along Onion Creek and covers 130 to 140 acres in the southernmost portion of the base. However, the floodplain on each of the smaller tributaries that drain the base is relatively narrow and covers less than an additional 10 acres. Approximately 4 percent of the Bergstrom AFB land falls within the 100-year floodplain.

Bergstrom AFB could potentially affect surface water quality by introducing chemical contaminants into the stormwater runoff, particularly engine fuels, lubricants, and antifreeze. Relatively small amounts of these compounds may leak or be spilled during routing operations and maintenance onto pavements and hangar floors. These substances can enter the stormwater via two main routes. Primarily, precipitation may collect these contaminants from the impervious surfaces (runways, taxiways, aprons, roadways) and carry them to streams. The use of drainage swales at the base probably helps to reduce the amount of these substances carried away. Secondly, 12 of the industrial buildings are equipped with floor drains that discharge into the stormwater drainage system. Each drain is equipped with oil/water separators to trap the oils washed into the drains. However, the potential exists for detergents and other chemicals to also be introduced into the drainage water. These substances constitute a slight hazard themselves, but they also may emulsify the water-insoluble oils, allowing them to mix with the water and be discharged despite the oil/water separators.

Stream water quality sampling indicates the extent of contaminants which actually are introduced into stormwater and ultimately into the streams in the vicinity, namely Onion Creek and the Colorado River. Of these two streams, Onion Creek would be most susceptible, as 70 percent of the base's stormwater is discharged into this stream.

Water quality data collected in 1981 for each of the tributaries that drain the base indicate frequent (>50 percent of the time) exceedances of state standards of pH and dissolved oxygen in all streams. In addition, infrequent elevated levels of several contaminants, including cyanide, copper, manganese, and cadmium, were detected. However, periodic samples of Onion Creek downstream of the South Fork Drainage Ditch confluence show consistently acceptable levels of all parameters, which indicates

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a very low impact on the water quality of Onion Creek by the base. City of Austin sampling of Onion Creek just upstream of the base and of the Colorado River just downstream of the base indicates the quality in both streams to be good. The TWC rates both streams as suitable for contact recreation, high quality aquatic life, and as a public water supply.

3.4.2.3 Wastewater Discharge Permits

Bergstrom AFB does not have an onbase sanitary sewage treatment facility. All of Bergstrom AFB's sanitary and industrial wastewater is pumped to the City of Austin municipal system, particularly the Hornsby Bend Wastewater Treatment Plant. The onbase system conveys at the lift station near the center of the housing area and is pumped to the Hornsby Bend Plant via a 10-inch cast iron force main. Wastewater from the base constitutes from 65 to 75 percent of the influent flow to that plant.

Although no discharge permit is required, the effluent of the base is monitored by the City of Austin in order to determine the surcharge for industrial wastewater treatment, including parameters such as pH, biological oxygen demand, chemical oxygen demand, and suspended solids.

3.4.3 Air Quality

3.4.3.1 Existing Air Quality

Bergstrom AFB and Travis County are located in the Texas Air Control Board's air quality monitoring Region III, which has generally good air quality. The county is a designated attainment area (air quality better than the National Ambient Air Quality Standards) for sulfur dioxide, volatile organic compounds (VOCs), nitrogen oxides, and carbon monoxide. There are five sources of particulates designated nonattainment. Bergstrom AFB is not a designated nonattainment source of particulates. Ozone is the only air pollution parameter for which Region III has had compliance problems in the past. According to the City of Austin's Department of Environmental Protection, motor vehicles are the major source of air pollution in Austin. Motor vehicles are major contributors of hydrocarbons and nitrogen oxides, which, in the presence of heat and sunlight, chemically change to produce ozone. The Texas Air Control Board monitors VOCs, which indicates the level of ozone in the region, and as stated above, Travis County is an attainment area for VOC.

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3.4.3.2 Air Pollutant Emission Sources

The air quality emissions (carbon monoxide, sulfur oxides, nitrogen oxides, VOC, and total suspended particulates) from various sources in Travis County are shown in Table 3.4.3-1 TBS. There is only one permitted pollutant emission source at Bergstrom AFB. The Texas Air Control Board permit (C-16959) is for stripping and painting operations at the Regional Corrosion Control Facility, a Government-Owned and Contractor-Operated facility. This construction permit was revised in June 1987. An operating permit application was received by the Air Control Board in February 1987, but because of a backlog of work, an operating permit has not been issued. For this reason the construction permit is valid until an operating permit can be issued. The operating permit will be valid for 15 years from the effective date.

Nonpermitted pollutant sources on Bergstrom AFB include the hospital and a classified document incinerator, two gas stations, military operation fueling areas, and spray paint operations (other than the Regional Corrosion Control Facility). An additional source is the gasoline fueling area at Lake Travis.

3.4.4 Noise

Noise is unwanted sound, and in order to measure and control noise, a scale was developed based on the response of human beings to noise levels. The unit of this scale is the decibel (dB). The decibel scale measures noise levels at one particular instant. Varying, instantaneous noise levels are averaged over a period of time in order to better describe ambient noise conditions at a particular location. Among these noise averaging systems, the day-night level (Ldn) has gained acceptability by most concerned federal agencies including the DOD. The Ldn is a 24-hour average of hourly averages. Each hourly average represents the sound energy of all the disparate sounds that occurred during that hour. The hourly average would be a continuous, uniform sound whose total sound energy would be equal to the sum of the individual sound energies of all the real sounds occurring during that hour. Typically, different hours of the day would have different hourly averages. For this reason and with the purpose of standardization, the Ldn is defined as an average of the 24 hourly averages of the day.

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Aircraft are a source of elevated noise levels. Airplanes, particularly jets, produce elevated noise levels not only on departure and arrival, but also under other circumstances such as while they are on the ground taxiing or undergoing engine testing.

The L_{dn} estimates for an airport are based on the number of flights of an average busy day, the number and orientation of runways, flight patterns, and other parameters that affect noise generation and propagation. These L_{dn} estimates are usually presented as noise contours. Noise contours are lines on a map of the airfield and its vicinity where the same L_{dn} is predicted to occur. Figure 3.4.4-1 shows the noise contours for Bergstrom AFB, as delineated by the 1987 Bergstrom AICUZ study and its 1990 revision. The pattern of noise contours at Bergstrom AFB is a relatively simple one because the base has only two parallel runways. The orientation of the runways is north-south. Noise contours range from 80 dB to 65 dB (Figure 3.4.4-1). The 5-dB interval chosen to represent noise contours reflects the Department of Housing and Urban Development (HUD) noise criteria commonly used for airfield noise. HUD considers L_{dn} ranges in relation to residential use of the land. An L_{dn} of 65 dB or lower is considered to be acceptable; an L_{dn} above 65 dB but not exceeding 75 dB is normally unacceptable; and an L_{dn} higher than 75 dB is unacceptable. Figure 3.4.4-1 shows that the higher L_{dn} occurs near the runways and the L_{dn} values spread radially away from them. The last L_{dn} recorded in Figure 3.4.4-1 is 65 dB because any L_{dn} lower than that would be considered acceptable for residential use of the land. In addition to aircraft noise, highway traffic noise generated by U.S. 183 and State Highway 71 makes a significant contribution to the ambient noise in the vicinity of the base.

3.4.5 Biological Resources

3.4.5.1 Vegetation Resources

The vegetation over the vast majority of the base has been disturbed, such that none of the original grassland vegetation which once dominated the area remains. For 200 years prior to the establishment of the base in 1942, some or all of the area was used for agriculture, beginning in the early 1700s with the original Spanish settlers. Despite the fact that the vegetation has been disturbed, much of the land is currently vegetated, although perhaps strongly altered from its original condition. The current vegetative conditions are variable depending upon past and current land use and management practices.

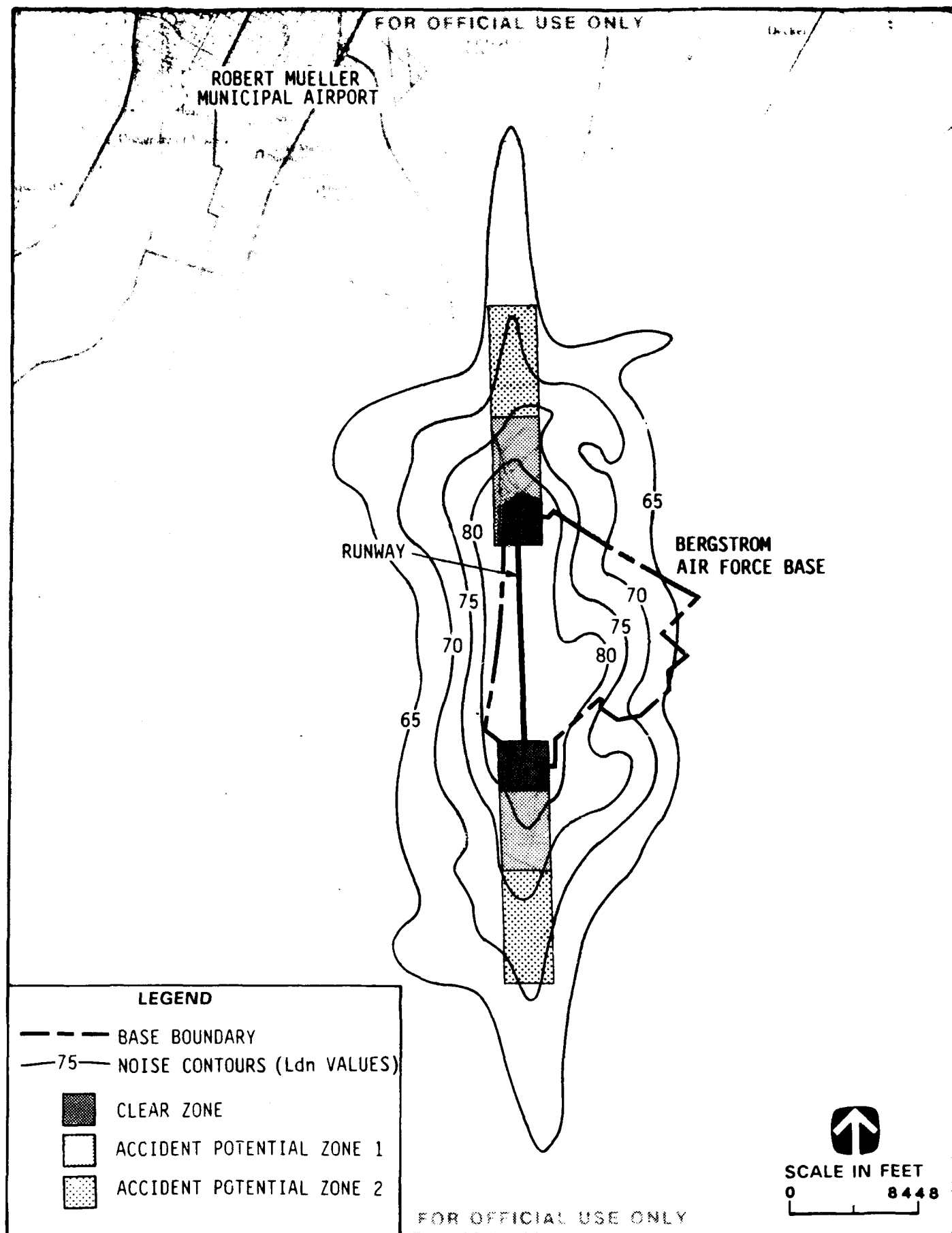


FIGURE 3.4.4-1 NOISE CONTOURS AND ACCIDENT POTENTIAL ZONES,
BERGSTROM AFB, TEXAS

Approximately 990 acres of suburban vegetation, including well-manicured lawns and the golf course, occur at the base. Much of this type of vegetation occurs in the cantonment area around military family housing, unaccompanied housing, and other mission-oriented facilities. These areas are dominated by grasses, mostly bermuda (Cynodon dactylon) and St. Augustine (Stenotaphrum secundatum) grasses, with a variety of native and ornamental trees, shrubs, and hedgerows. Weekly mowing and annual tree/shrub trimming are performed in accordance with base appearance standards. Fertilizers are applied regularly to lawns, trees, and shrubs, and pesticides are used to control nuisance insects such as mosquitoes, tagworms, and caterpillars. Most weeds are controlled by manual removal, although a relatively small amount of herbicide is used to control weedy grasses such as crabgrass and johnson grass.

Semi-improved areas cover approximately 680 acres, including areas immediately adjacent to runways and taxiways (lateral safety zones), picnic areas, munitions storage areas, pistol/rifle ranges, and the old landfill site east of the munitions storage area. These areas are largely open grassy areas; dominant species include King Ranch bluestem (Bothriochloa ischaemum) and johnson grass (Sorghum halaspense), although a few other grasses also occur, including common bermuda grass, fescue (Bromu unioloides), and Texas wintergrass (Stipa leneotricha). Mowing is performed regularly (except on the old landfill site), although only about twice monthly. Fertilizing is performed as needed to maintain growth and reduce dust and erosion. Scattered trees also occur; several hundred trees have been recently planted in a recreation area near the munitions storage area. A wooded area occurs along the intermittent stream through the old landfill site.

The remainder of the base is considered unimproved, although this area is not uniform in character. Approximately 690 acres are still used for agriculture, particularly hay production. The hay production area is located adjacent to and between the runways and primary taxiways (beyond the safety zone). Vegetatively, this area is composed exclusively of grasses, mostly the same species as in the semi-improved areas. These areas are harvested (mowed) two or three times annually by a private contractor who leases the area. However, the maximum height of the grass is maintained at 14 inches or less, in order to reduce utilization of the area by bird fauna, in accordance with the base's bird/aircraft safety hazard plan.

Two grazing areas comprise approximately 200 acres, and are situated north and west of the runways and adjacent hay production areas. These areas are separated from the hay cropping areas by a

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maintenance road. These areas are predominantly grasslands, with scattered small trees, mostly live oak (Quercus virginian) and mesquite (Prosopis chilensis), the latter sometimes growing in dense patches. These areas are not mowed and are largely used for grazing, particularly for the base riding club horses.

Two natural areas onbase comprise approximately 80 acres. These areas are not managed (e.g., mowed) or utilized in any specific manner, and generally support natural woody vegetation. Both are associated with streams that drain the base.

A 70-acre wooded area occurs just south of the main runway along both sides of Onion Creek. This area supports some large trees, dominated by cottonwood (Populus deltoides) and pecan (Carya illinoensis), and a dense shrubby understory. Some trees in the flight path of the runway are topped in accordance with aircraft safety regulations. Although frequently flooded, the soil in this area is considered well drained. This area would therefore not qualify as a wetland under the federal definition (USFWS 1989).

A natural area of approximately 10 acres is located in the northeast corner of the base along an intermittent tributary to the Colorado River and is actually included within the base golf course. Woody vegetation also grows here along the edges of the ravine; dominant trees in this area are ash (Fraxinus spp.) and black willow (Salix nigra). This area is currently being maintained in a natural state.

3.4.5.2 Wildlife Resources

No detailed wildlife inventories have been conducted on Bergstrom AFB. However, the vertebrates known to inhabit the base are typical for the region, given the type of habitat provided, primarily suburban landscape and grasslands. Prominent grassland bird species at the base include black-throated sparrow (Amphispiza bilineata) and eastern meadowlark (Sturnella magna). Urbanized birds common to the base include starlings (Sturnus vulgaris), mourning dove (Zenaida macroura), and great-tailed grackle (Quiscalus mexicanus). Mammals common to these habitats include black-tailed jackrabbit (Lepus californicus), fieldmouse (Rheithrodontomys sp.), and Mexican ground squirrel (Spermophilus mexicanus).

Aquatic habitats are quite limited. The largest and most valuable aquatic habitat on base is the 3,000-foot section of Onion Creek which crosses the southwestern corner of the base. This perennial stream contains permanent pools, thereby sustaining aquatic life during low-flow periods. The adjacent woodland habitat increases habitat value in several ways: through shading of the stream, providing cover for inhabitants during hot summer months, by providing nutrients input, and by providing a natural floodplain.

Two other streams also occur on base: the tributary to the Colorado River in the northeastern corner of the base and the tributary to Onion Creek in the old landfill site. These streams are also bounded by some riparian woody growth, but their value is limited by the fact that their flow is intermittent and highly dependent upon stormwater runoff from the base. Prominent fish in all of these streams are listed as sunfish and minnows.

Two ponds occur on the base golf course; they have a combined area of less than 1 acre. At the time of preparation of the base wildlife management plan, these ponds supported a limited fish fauna, primarily black bullheads (Ictalurus melas). Subsequently, the northern pond was pumped dry. It is now used as a catchment basin for effluent from the Hornsby Bend Treatment Plant and this pond is planned to be used to irrigate the base golf course. The southern pond maintains some water nearly throughout the year, although the water level fluctuates substantially. No fish are known to occur in either pond, although turtles do inhabit the southern one.

Inventories of vertebrates in Travis County have resulted in a master list of 42 mammal species, 124 birds, 47 reptiles, and 45 fish species which occur in the county. Many of these species may not occur on the base due to the lack of appropriate habitat. Still others may occur only as transients, particularly birds and bats.

One important feature of the base as a wildlife habitat is its location relative to other habitats nearby. Most importantly, the Hornsby Bend Wastewater Treatment Plant is located north of the base along the Colorado River. This plant maintains two ponds for effluent treatment, also known as Platt's Ponds. These ponds are located in the Central Flyway for migratory birds, and are a primary stopover point. Also notable are the city landfill south of the base, which attracts birds such as gulls, crows, vultures, and other scavengers; and Decker Lake to the northeast. Birds regularly travel between these

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three points, and therefore may occur as transients at the base. This bird traffic constitutes a certain nuisance level to aircraft operations at the base.

A wildlife management plan has been assembled for the base. The objectives of the plan are essentially to protect and improve the habitat of the base without compromising its mission. The general scheme of management is to attract wildlife to selected areas onbase, while making the airfield area unattractive in order to reduce the potential conflict of aircraft and wildlife. Five natural areas were specifically chosen for habitat management based upon their current wildlife value: the woodland/stream habitat in the northeastern corner, the old landfill site, the wooded area along Onion Creek, and the two grazing areas north and west of the runways. The wooded areas are scheduled to be maintained in a natural state, with the possible addition of native species. The grazing areas and the old landfill site are to be managed to increase wildlife utility by augmenting nesting habitats and by opening the existing dense vegetation to allow increased reproduction of other successional plants. To date, a limited amount of this action has been implemented.

Another objective of the base wildlife management plan is the reduction of nuisance species. Of particular importance are the jackrabbits which thrive on the open, lowcut fields around the runways. Establishment of some bunch grasses in this area has been chosen as a technique to control the rabbits, although it has not yet been implemented.

3.4.5.3 Wetlands

No hydric or wetland soils occur onbase, thereby indicating no widespread wetlands. The grassland vegetation over the majority of the base, with the exception of the limited amount of riparian woodland, is largely dependent on a drier habitat. However, the National Wetlands Inventory (NWI) map (Montopolis Quadrangle) shows several small areas of wetland or deepwater habitats to occur on the base which would not be reflected in the soil survey (U.S. Fish and Wildlife Service 1985). All are directly associated with the waterbodies on the base and have a total area coverage of approximately 17.25 acres.

Two types of unvegetated, open water habitats occur onbase. Onion Creek is shown as a perennial, permanent, riverine, open water habitat, covering an estimated 3.5 acres onbase. Five small areas of permanent, palustrine open water (i.e., ponds) are also shown. Two of these correspond to the ponds

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on the golf course. One small area is shown adjacent to the South Fork Drainage Ditch, and the other is shown along Burleson Creek. All of these ponded areas are also noted as having been artificially created and/or maintained by excavation. All total, these habitats cover approximately 3.75 acres.

The other two types are vegetated wetland habitats. One linear palustrine emergent marsh (i.e., the vegetation is dominated by herbaceous rather than woody species), about 3.75 acres in size, occurs along the upper reaches of Burleson Creek. Linear areas of palustrine, deciduous forested wetland are shown to occur along the South Fork Drainage Ditch, the unnamed stream in the northeastern corner of the base, and along a small tributary that enters Onion Creek from the south where the creek crosses the base. Forested wetlands as shown are estimated to cover approximately 8 acres of the base along these streams.

To date, no detailed delineation studies of wetlands according to the federal 3-parameter method have been conducted onbase.

3.4.5.4 Threatened and Endangered Species

No threatened or endangered species have been identified on Bergstrom AFB. However, 16 of bird, 2 amphibian, 4 reptile, and 2 fish species are known to occur or may occur in Travis County. These species are listed in Table 3.4.5-1.

Although none of these species are known to nest onsite, several species, mainly the birds, may occur as transients. This is especially true due to the location of the base relative to other habitats which attract migrants, particularly Platt's Ponds. Notable bird species sited at Platt's Ponds include the bald eagle and piping plover. The use of the base by any of these threatened or endangered species depends upon their habitat requirements and the accessibility of the base to these species.

Table 3.4.5-1

Threatened and Endangered Species
That Occur or May Occur Within a 50-Mile
Radius of Bergstrom AFB

Scientific Name	Common Name	Jurisdiction ¹	Status ²	Occurrence ³
<i>Grus Americana</i>	Whooping Crane	F	E	C
<i>Numenius borealis</i>	Esomo Curlew	F	E	P
<i>Haliaeetus leucocephalus</i>	Southern Bald Eagle	F	E	C
<i>Falco peregrinus tundrius</i>	Arctic Peregrine Falcon	F	T	P
<i>Pelicanus occidentalis</i>	Brown Pelican	F	E	P
<i>Falco peregrinus anatum</i>	Peregrine Falcon	F	E	P
<i>Charadrius melodus</i>	Piping Plover	F	E	C
<i>Vireo atricapillus</i>	Black Capped Vireo	F	E	P
<i>Sterna antillarum</i>	Interior Least Tern	F	T	P
<i>Buteo albicaudatus</i>	White Tailed Hawk	S	T	P
<i>Buteo albonotatus</i>	Zone Tailed Hawk	S	T	P
<i>Plegadis Chihi</i>	White Faced Ibis	S	T	C
<i>Elanoides forficatus</i>	American Swallow Tailed Kite	S	T	P
<i>Pandion haliaetus</i>	Osprey	S	T	C
<i>Mycteria americana</i>	Wood Stork	S	T	P
<i>Dendroica chrysoparia</i>	Golden Cheeked Warbler	F	E	C
<i>Typhlomolge rathbuni</i>	Texas Blind Salamander	F	E	C
<i>Bufo houstonensis</i>	Houston Toad	F	R	C

Table 3.4.5-1 Continued, Page 2 of 2

Scientific Name	Common Name	Jurisdiction ¹	Status ²	Occurrence ³
Alligator Mississippiensis	American Alligator	F	T	C
Phrynosoma cornutum	Texas Horned Lizard	S	T	C
Lampropeltis triangulum annulata	Mexican Milk Snake	S	T	C
Macroclemys temminicki	Alligator Snapping Turtle	S	T	P
Etheostoma fonticola	Fountain Denter	F	E	C
Cycleptus elegans	Blue Sucker	S	T	P
Texella reddelli	Bee Creek Cave Harvestman	F	E	?
Texamaurops reddelli	Kretschmarr Cave Mold Beetle	F	E	?
Microcreagris texana	Tooth Cave Pseudoscorpion	F	E	?
Rhadine persephone	Tooth Cave Ground Beetle	F	E	?
Neoleptoneta myopica	Tooth Cave Spider	F	E	?

¹Jurisdiction - F = Federally listed; S = State listed²Status - E = Endangered; T = Threatened³Occurrence - C = confirmed within 50-mile radius of Bergstrom AFB; P = possible, based upon habitat available, species range, and historical sitings.

Source: Whitehead 1986; City of Austin, Department of Aviation 1990; U.S. Fish and Wildlife Service 1990.

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05/21/90**3.4.6 Cultural and Paleontological Resources****3.4.6.1 Prehistoric Resources**

Prehistoric sites identified on and in the vicinity of Bergstrom AFB include occupation sites, quarry sites, and lithic scatters. Eight cultural resource surveys have been conducted in areas adjacent to the base in conjunction with the Onion Creek Wastewater Interceptor (1979-1986) and a reconnaissance survey was conducted for portions of Bergstrom AFB in 1987. Fourteen sites have been identified within 1 mile of the base, nine of which are considered eligible or potentially eligible for the National Register of Historic Places (NRHP). A Class III Cultural Resources Inventory is presently being conducted on Bergstrom AFB to identify sites in undeveloped portions of the base (results TBS).

Two concentrations of prehistoric sites have been recorded adjacent to Bergstrom AFB: the Navarro cluster and the Bergstrom cluster. The Navarro cluster consists of seven occupation and quarry sites located along Lower Onion Creek just south of the runway. These sites contain the Navarro formation flint cobbles, lithics, burned rock, and bone. Charred musselshell was recovered from one buried site (41TV434). Five of these sites have been previously disturbed and are not considered eligible for the NRHP. The remaining two sites will require further evaluation. The Bergstrom cluster consists of 17 sites, 7 of which are adjacent to the Weapons Storage Area on the north side of Onion Creek. The seven Bergstrom sites include four occupation sites, a quarry site, and two smaller lithic scatters. The occupation sites contain fire hearths, lithics, burned rock, bone, and musselshell. Site 41TV285 has cultural materials buried to depths of 8.5 meters and has been recommended as NRHP eligible. The other six sites require additional evaluation and may be considered potentially NRHP eligible.

3.4.6.2 Historic Resources

Historic resources on and in the vicinity of Bergstrom AFB include homesteads, historic trails, a bridge, and various types of standing structures. One area cluster of eight historic sites has been identified south of Bergstrom AFB and is designated the Moore's Crossing/Fincher Road area. The eight sites include the old Moore's Crossing Bridge, an historic ford with old roads on the opposing banks, 19th- and 20th-century household scatters, and a cemetery. Four of the historic sites have been recommended as potentially eligible for the NRHP and would require additional evaluation. The

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Greenwood Cemetery contains headstones with both Anglo-Saxon and Spanish surnames; however, cemeteries are among those types that ordinarily do not qualify for the NRHP (36 CFR 60.4).

Bergstrom AFB was originally established in 1942 as Del Valle Army Air Base. Thirty structures on the base were built before 1945; the base prepared site forms on the structures and they were evaluated for their NRHP eligibility. The base recommended that none of the structures be considered architecturally or historically important.

3.4.6.3 Paleontological Resources

Geologic formations that have surface exposures on Bergstrom AFB include the Colorado River deposits (Quaternary age alluvium), the Navarro Group, the Marlbrook Marl, and the Ozan Formation, all of Cretaceous age. The majority of the base is situated on the Colorado River deposits. The Ozan Formation occurs in the northwest portion of the base and the Navarro Group and Marlbrook Marl are exposed along Onion Creek on the south side of the base. It is likely that the only fossiliferous formation is the Marlbrook Marl on the south side of the base. Paleontological materials that may be associated with the marl are cephalopods, pelecypods, gastropods, and echinoids. No known paleontological localities have been identified adjacent to the base.

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4.0 ENVIRONMENTAL CONSEQUENCES

This chapter discusses the environmental consequences associated with the closure of Bergstrom Air Force Base (AFB), Texas. The assessment of impacts focuses on those resources that constitute portions of the physical environment. This approach is in keeping with recent developments in the National Environmental Policy Act (NEPA) case law that have narrowed the interpretation of Council on Environmental Quality (CEQ) regulations regarding discussion of socioeconomic issues in environmental impact statements (EISs) (Metropolitan Edison Co. v. People Against Nuclear Energy, 460 U.S. 766, 18 E.R.C. 1985 [U.S. Supreme Court 1983], Olmstead Citizens for a Better Community v. U.S., 793 Fed. 201, 27 E.R.C. 2115 [8th Cir., 1986]).

Socioeconomic issues are considered to see if they cause significant biophysical impacts to the environment. Therefore, changes in socioeconomic and other contextual parameters of the local community are described first. Changes in the generation and treatment of hazardous materials are also considered. Impacts to the physical environment resulting from those changes are then summarized within the following resources: geology and soils, water resources, air quality, noise, biological resources, and cultural and paleontological resources. In addition, the relationship between short-term uses and long-term productivity of the environment and irreversible and irretrievable commitment of resources are discussed. Mitigation measures for all significant environmental impacts are discussed in the final section.

4.1 LOCAL COMMUNITY

During preparation of this EIS, the Air Force considered whether there might be any indirect biophysical effects that could be attributed to socioeconomic changes in the local support communities. Selected socioeconomic changes related directly or indirectly to biophysical factors are discussed in this section.

The Air Force is sensitive to the community upheaval that may be caused by closing a major employer like Bergstrom AFB. Therefore, the Air Force is working with the Office of Economic Adjustment (OEA) to assist the communities expected to be hardest hit as a result of base closure. The OEA, located in the Office of the Assistant Secretary of Defense, is the chief staff arm for the President's

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Economic Adjustment Committee (EAC). The EAC consists of federal department and agency heads and was established under Executive Order 12049 on March 27, 1978, to provide resources of various federal agencies in assisting communities affected by base closures.

One of the OEA's activities is to assist support communities in the development and implementation of comprehensive economic recovery programs. The EAC then affords priority assistance to community requests for federal technical assistance, financial resources, excess or surplus property, or other requirements that are part of this program. OEA has already initiated planning actions at the local level to provide planning assistance to communities to be affected by the closure of Bergstrom AFB.

4.1.1 Community Setting

4.1.1.1 Employment and Population

The closure of Bergstrom AFB would reduce employment in Travis County by approximately 9,800 jobs including 6,700 direct jobs onbase and 3,100 secondary jobs. This reduction in employment would result in a decrease in personal income of about \$200 million annually, and a decrease in local spending (including personal consumption expenditures and base procurement) of approximately \$250 million annually.

All military employees would be relocated and it is projected that approximately 50 percent of direct and secondary civilian employees would also relocate to other areas. It is also expected that about 10 percent of military retirees would also relocate closer to other active installations. Total population outmigration is projected to be approximately 20,000 people when the base is completely closed in 1993. This represent about 4 percent of the current (1990) population in the City of Austin.

4.1.1.2 Housing

The closure of Bergstrom AFB would discontinue the use of all military family and dormitory housing onbase. In addition, approximately 6,000 households living offbase are expected to relocate, leaving this number of housing units vacant. This would result in an increase in the vacancy rate for permanent housing of about 3 percent over the current rate of 8 percent.

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05/21/90**4.1.1.3 Education**

The closure of Bergstrom AFB would reduce enrollments in the Del Valle Independent School District by about 800 students, approximately 14 percent of the current total. The normal yearly rate of teachers transferring out of the Del Valle Independent School District will account for the loss of teaching positions without having to dismiss or nonrenew any contracts.

4.1.1.4 Community Services

A total of 33,000 people currently rely on Bergstrom AFB for medical care including about 19,000 military retirees and their dependents. If medical care were not available through the base, travel to other medical facilities, such as the regional medical center in San Antonio, may be required. In addition, the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) would provide payment for health services provided in civilian facilities.

4.1.2 Land Use and Aesthetics

The ownership of Bergstrom AFB will become a consideration when the title to the base property is transferred. Because the City of Austin holds an equity interest in the majority of base acreage, the extent of their interest must be determined. To date, it is not clear if the city's equity interest covers real property alone or includes improvements made by the Air Force.

A caretaker team will be established at the time of closure to provide building, ground, and water supply system maintenance, and to provide adequate security. Consequently, base land use would not change as a result of closure action.

4.1.2.1 Existing Land Use Patterns

The base closure would affect the occupancy of mission-related facilities, housing, and community services. Management facilities would be vacated until the reuse of the property is determined, and until that time, a caretaker program would provide maintenance to prevent deterioration of facilities and to retain a positive appearance.

The Lake Travis recreation area, which is leased by the Air Force, would be slightly affected by the closure. The lease provides a cancellation clause that allows the Lower Colorado River Authority to find an alternative leaseholder. In addition, public use of the recreation area would not be affected by the base closure.

Future land use would be affected by the nature of the base reuse, which would be discussed in the reuse EIS. The reuse EIS would aid the City of Austin in making applicable zoning and service decisions.

The closure of Bergstrom AFB may have potentially beneficial impacts to the land uses surrounding the base. The reduction of noise impacts and potential aircraft accidents may allow expansion of development opportunities in the undeveloped areas surrounding Bergstrom AFB. This increase in development would take advantage of existing infrastructure and services in the area.

4.1.2.2 Land Use Plans and Policies

The City of Austin's land use plans and policies would undergo revisions to accommodate the type of development that base closure would allow.

4.1.2.3 Zoning and Other Regulations

Presently, Bergstrom AFB is unzoned by the City of Austin, and rezoning would depend on future land use and subdivision that would occur immediately upon base closure. Therefore, zoning would not be affected immediately.

4.1.2.4 Aesthetic and Visual Resources

No construction or demolition activities are planned as part of the proposed closure action. The installation would be under Air Force control within a secured boundary, and the Air Force Reserve units would remain in place. Buildings and grounds would be maintained until final disposition is decided. Therefore, no change in aesthetic and visual resources is anticipated.

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4.1.3 Transportation

4.1.3.1 Assumptions for Closure Implementation

The results presented in the following sections were derived for impact assessment purposes and may not accurately reflect actual closure plans. The potential environmental impacts of the closure are defined by the quantities and types of the materials being transported and by the mode of transportation. For this purpose, quantities of weight have been associated with personnel and supplies being relocated. All of the applicable modes of freight transportation have been shown to relate the utility or disutility of each mode for providing long-haul transport services. It is assumed that each of the modes, truck, train, and plane, or a combination of these modes, will be considered.

The total working force, military and civilian, at Bergstrom AFB is approximately 8,000. However, the number of people involved in the relocation is estimated to be 4,110. This number is based on the mission functions that would no longer be assigned to Bergstrom AFB but would not be inactivated. Approximately 52 percent of the current military and civilian personnel are associated with these mission functions.

It is assumed that each workstation contains an average of 3,000 pounds of equipment and that each employee represents a workstation. It is also assumed that 64 percent of military and 39 percent of civilian employees are single. It was assumed that single personnel occupied three rooms and personnel with dependents occupied five rooms, and rooms were calculated as containing 1,000 pounds of personal property. It was also assumed that the 4,110 persons being transferred would either be flown via commercial air or would use privately owned vehicles to relocate themselves and their dependents, not including any cargo.

The closure of Bergstrom AFB would require the transport of personnel, aircraft, work equipment, and household goods of active Air Force missions currently located at the base. Various Air Force units and aircraft would be reassigned to Davis-Monthan AFB in Tucson, Arizona, and Mountain Home AFB near Mountain Home, Idaho.

The Bergstrom AFB closure would involve relocating a number of active units, inactivating units, and maintaining many reserve forces on the installation. It is estimated that 3,660 military and 450

civilian positions would be relocated, and workstations, equipment, and personal property would be moved. Based on the above assumptions, it is estimated that 6,170 tons of workstation equipment and 7,760 tons of personal property cargo would have to be moved. Use of a tractor trailer weight per load of 9 tons (18,000 lb) and the total weight of 13,930 tons results in an estimate of 1,548 truckloads of equipment and possessions to be moved.

Davis-Monthan AFB is located within the city limits of Tucson, Arizona, 5 miles north of Interstate 10 and within 10 miles of Interstate 19. Davis-Monthan AFB may be gaining 840 military and 30 civilian positions. The weight of equipment and personal property associated with relocating the 12th Air Force, 602nd TCC, and the 4500 School Squadron is approximately 2,930 tons. Davis-Monthan is 900 miles from Bergstrom AFB.

Mountain Home AFB is located 11 miles southwest of Mountain Home, Idaho, within 10 miles of Interstate 84. Mountain Home AFB may be gaining 2,820 military and 420 civilian positions, and the weight of equipment and property associated with relocating the 67th Tactical Reconnaissance Wing and the 91st Tactical Reconnaissance Squadron is approximately 11,000 tons. Mountain Home AFB is 1,854 miles from Bergstrom AFB.

4.1.3.2 Modal Considerations

Highways. If the relocation occurs over a period of 2 weeks in each of the quarters of fiscal year (FY) 1992, the average daily traffic for 10 days of each quarter should increase by 40 trucks per day. Because commuting by personnel leaving the area has already been included in existing baseline traffic conditions, no attempt has been made to estimate additional vehicle trips during their move.

The highway traffic conditions in the Austin metropolitan area are considered heavy during peak travel conditions. The level of service on State Highway 71 leading to the base ranges between E and F. Addition of 40 trucks to the existing volumes of traffic would temporarily increase congestion. Therefore, it is recommended that the additional truck traffic be scheduled to avoid arriving and/or departing the base during the hours of 6:00 A.M. and 10:00 A.M. or 3:00 P.M. to 7:00 P.M. To further alleviate traffic congestion, the moving period, assumed to be 10 days per quarter, can be extended to a longer period.

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Rail. Some of the equipment leaving Bergstrom AFB could be shipped by railroads. This would, however, not reduce the truck traffic in the vicinity of the base since trucks would still be used to move materials to the railroad terminals.

Air. All air freight shipments can be considered intermodal because a truck is used for origin/destination to and from the terminal. No direct pick-up or delivery occurs between the airplane and the shippers location. If equipment is moved by military air transport, short-term increase in air traffic would occur.

4.1.3.3 Aircraft Safety

The closure of Bergstrom AFB would decrease the number of military aircraft operations in the Austin area by approximately 60 percent. The primary reduction would result from relocation of the 67th Tactical Fighter Wing's 18-36 aircraft to Mountain Home AFB, Idaho. The 18 F-16A aircraft of the 704th Tactical Fighter Squadron and transient aircraft that use the Regional Corrosion Control Facility located at Bergstrom would remain at the base.

Conflicts between military and civilian air traffic may continue because of the basic airspace structure of the area; however, the volume of military air traffic would decline. Because of the military operations areas that are located northwest of Austin, military aircraft would still fly through the Austin airport radar surveillance area and associated civilian aircraft traffic areas.

The reduced volume of military aircraft operations resulting from the base closure may reduce the potential for aircraft accidents; however, basic changes in airspace structure, facilities, and routings would be required to enhance air traffic safety.

4.1.4 Utilities

4.1.4.1 Water Supply

Bergstrom AFB received 4 percent of the total water usage from the Greenwater Treatment Plant in FY 1989. Caretaker activities at the base and continuation of Air Force Reserve units and the

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Regional Corrosion Control Facility would still utilize a portion of the current demand. Base closure would result in an approximate decrease of 14 percent or 46,034 KGal would be used by the Air Force Reserves. Base closure would, therefore, result in lower water demand on the Austin system, increasing the available water capacity for other urban users.

4.1.4.2 Wastewater Treatment

Bergstrom AFB contributes approximately 0.5 million gallons per day (MGD) to the Hornsby Bend Wastewater Treatment Plant. This amounts to about 75 percent of the plant's intake. With base closure, substantial reductions in base contribution to the plant would occur. However, plans are under review to phase out this plant and it would not be affected by base closure. The base was to switch to the South Austin Regional Wastewater Plant, which has a 40 MGD capacity; base closure would result in an insignificant loss of expected wastewater volumes to this plant.

4.1.4.3 Solid Waste

The closure of Bergstrom AFB would result in a long-term positive impact to the City of Austin landfill. The landfill to which solid waste from the base is hauled has a 10-year lifespan remaining. The reduced waste stream will give the landfill a longer life span. The short-term effects of an increased solid waste stream due to the closure process would not be significant.

4.1.4.4 Energy

Upon base closure, gas usage would slow to 10 to 20 percent of current levels. Because current usage levels represent an insignificant percentage of sales volume of the Valero Transmission Company, the company should be unaffected by the base closure.

Base closure would result in an estimated 85 percent drop in electricity consumption for a total yearly usage of 9,800,000 kilowatt-hours. Because of projected yearly increases in the peak demand in the Austin service area, the closure of Bergstrom AFB should not adversely affect the City of Austin electric utility.

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05/21/90**4.2 HAZARDOUS MATERIALS****4.2.1 Hazardous Waste Management**

All the waste stored at the base would be properly disposed of and all residual contamination would be remedied in accordance with an Environmental Protection Agency (EPA) Resource Conservation and Recovery Act-approved closure plan. The hazardous waste accumulation points would be sampled and an assessment would be performed to determine whether a history of spills has occurred at any of these accumulation points.

4.2.2 Installation Restoration Program Sites

The Installation Restoration Program (IRP) will not be affected by the base closure. The IRP is independent of the base closure process and will continue, as needed, after the military mission has been terminated. Through this program, the Air Force is committed to thoroughly investigate and remedy contaminated sites as needed. The Air Force; EPA, Region VI; and the State of Texas would be involved in decisions on the clean-up of contaminated sites.

4.2.3 Hazardous Waste Storage and Handling

Although the hazardous waste generation would be substantially reduced with the partial closure of the base, current Air Force policies for storage and handling would continue until base reuse is determined.

4.2.4 Storage Tanks

The Air Force would closely coordinate the disposition of underground storage tanks with the EPA, Region VI. Accidental spills, fires, or explosions would be prevented when the aboveground tanks are emptied and purged prior to closure.

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05/21/90**4.2.5 Asbestos**

The extent and condition of asbestos at Bergstrom AFB must be identified to determine the impacts from base closure. An asbestos survey would be completed before the closure, and any asbestos found to present a health hazard or potential health hazard would be removed or remedied in accordance with the Air Force Policy on Management of Asbestos at Closing Bases.

4.2.6 Polychlorinated Biphenyls

Current Tactical Air Command plans call for Bergstrom AFB to be free of PCBs by January 1992 prior to the base closure.

4.2.7 Radon

Upon completion of the Radon Assessment and Mitigation Program survey in May 1991, the Air Force will release the results from the year-long monitoring program.

4.2.8 Radioactive Materials

The radioactive wastes contained in the waste cells at the radioactive disposal site at Bergstrom AFB would have to be analyzed to determine the level of radioactive material and the type of radioactive wastes that would need to be taken to an appropriate Treatment, Storage, and Disposal Facility. Appropriate testing and analyses, safety procedures, transport, and disposal would comply with all local, state, and federal regulations as administered by the Nuclear Regulatory Commission under 10 CFR 20 and the EPA under 40 CFR 191.

4.2.9 Oil/Water Separators

The contents of the oil/water separators would be pumped out and decontaminated. Oils, volatiles, and aqueous and sludge areas including sand and grit removed from the oil/water separator would be tested for toxic contamination. Toxic materials would be disposed of in accordance with the applicable local, state, or federal regulations.

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05/21/90**4.3 PHYSICAL ENVIRONMENT****4.3.1 Geology and Soils****4.3.1.1 Geology**

The base closure would not affect the geology that underlies Bergstrom AFB.

4.3.1.2 Soils

Base closure would have positive impacts on the base's soils, because training, maintenance, and construction for new military missions would be stopped. The discontinuation of the current active duty Air Force mission would significantly reduce the amount of new construction. This would allow the soil to retain its natural profile and would reduce the amount of soil erosion. The risk of soil contamination by spills or unintended releases of hazardous materials due to active military operations would also be reduced. However, because the 924 Tactical Fighter Group (TFG) would remain at the base, unintended releases of hazardous materials during day-to-day operations would still be a possibility. The Air Force Reserves (AFRES) are not forecasting growth of the 924 TFG unit; therefore, no new construction and disturbance of soil onbase would occur as a result of the AFRES mission.

4.3.2 Water Resources

Base closure would have a positive impact on the water quality in the area by diminishing potential and ongoing impacts to surface water quality. The cessation of active duty operations would also significantly reduce the introduction of contaminants to stormwater runoff. Fuel and other hazardous chemical storage tanks would be emptied, and spills caused by corroded tanks would be avoided. Because the IRP will continue, any historical and ongoing contamination sources will be identified and remedied.

The overall demand for water for drinking, sanitation, irrigation, and industrial uses would be drastically reduced. In addition, the demand on the city's water facilities, which supply nearly all the base's water, would be reduced. However, because the base's demand on city's water supply is

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minimal (less than 1 percent), the reduced demand would have little actual impact. Stormwater would still be routed to the streams that drain the base so that the current hydrology of these streams would be maintained.

Currently, no groundwater is drawn from the underlying aquifers for use on the base. However, the base is located on a majority of the recharge area for the shallow alluvial aquifer that is used on adjacent land. Base closure would result in keeping the current permeable surfaces undisturbed, thereby increasing the recharge rate of this aquifer.

4.3.3 Air Quality

The closure of Bergstrom AFB would significantly reduce pollutant emissions caused by base operations and motor vehicle traffic. The majority (54 percent) of base emissions result from aircraft flying operations, and base closure would reduce aircraft emissions by approximately 64 percent, which is 34 percent of the total emissions. The remaining emissions are produced by the reserve unit and transient aircraft, which would continue to use the airfield after closure. The 924 AFRES activities contributed 174 tons of pollutant emissions in 1988. This is an insignificant amount (TBS percent) of the regional pollutants emissions (TBS).

Pollutant emissions from motor vehicles would be significantly reduced, which would reduce ozone levels. Continued emission sources, in addition to the 924 AFRES, would include heating and the Regional Corrosion Control Facility. These sources are responsible for a small percentage of the base's total emissions and would not adversely affect the regional air quality.

4.3.4 Noise

Noise generation from daily base operations and motor vehicles would be significantly reduced after the closure. Predictions from the Federal Highway Administration noise model STAMINA 2.0 indicate that the noise levels would be reduced by 2 to 3 decibels on the A-weighted scale (dBA) from the current levels of 62 to 64 dBA along State Highway 71. This small reduction in noise levels would not be detectable and the noise impacts, though beneficial, would be insignificant. During the closure process, the movement of personnel and equipment may cause some noise increases; however, this would be a short-term impact.

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After base closure, the 704th Tactical Fighter Squadron (TFS) would remain in place. These units would continue to use the airfield, but the total number of flights would be greatly reduced. Therefore, noise levels around the base would be substantially lower. Also, in 1991, the 704th TFS will convert from the F-4E aircraft to the F-16A aircraft. Because the F-16A is a quieter aircraft, this conversion will reduce noise levels and generate a smaller noise contour as shown in Figure 4.3.4-1.

4.3.5 Biological Resources

After base closure, a minimal maintenance plan would be implemented to maintain base facilities until they are reused. This maintenance plan would include continued, although less frequent, lawn mowing and hay cropping in areas near the runways. Plant communities over the majority of the base would remain essentially constant following base closure, with the possible exception of areas that are currently not maintained and/or will no longer be used in the same manner such as the grazing areas, recreation areas, and rifle ranges. These areas may be allowed to undergo natural succession toward a grassland habitat; however, they will not revert to their original prairie composition and structure because several exotic species dominate the area.

The withdrawal of military personnel and operations would have a positive impact on wildlife at the base. Although certain aspects of the wildlife management plan that would augment the habitat in selected areas of the base may not be implemented before closure, the lack of human activity would increase the quality of the habitat, especially for animals less tolerant of humans.

No threatened and endangered species have been identified on the base so there would be no adverse impacts due to closure of the base. Rather, this action may open some habitats, particularly those on and adjacent the base, to threatened or endangered species that prefer this type of habitat.

4.3.6 Cultural and Paleontological Resources

4.3.6.1 Prehistoric Resources

Bergstrom AFB is located in an area between the confluence of Onion Creek and the Colorado River. Numerous prehistoric sites have been identified adjacent to the base and additional resources may be

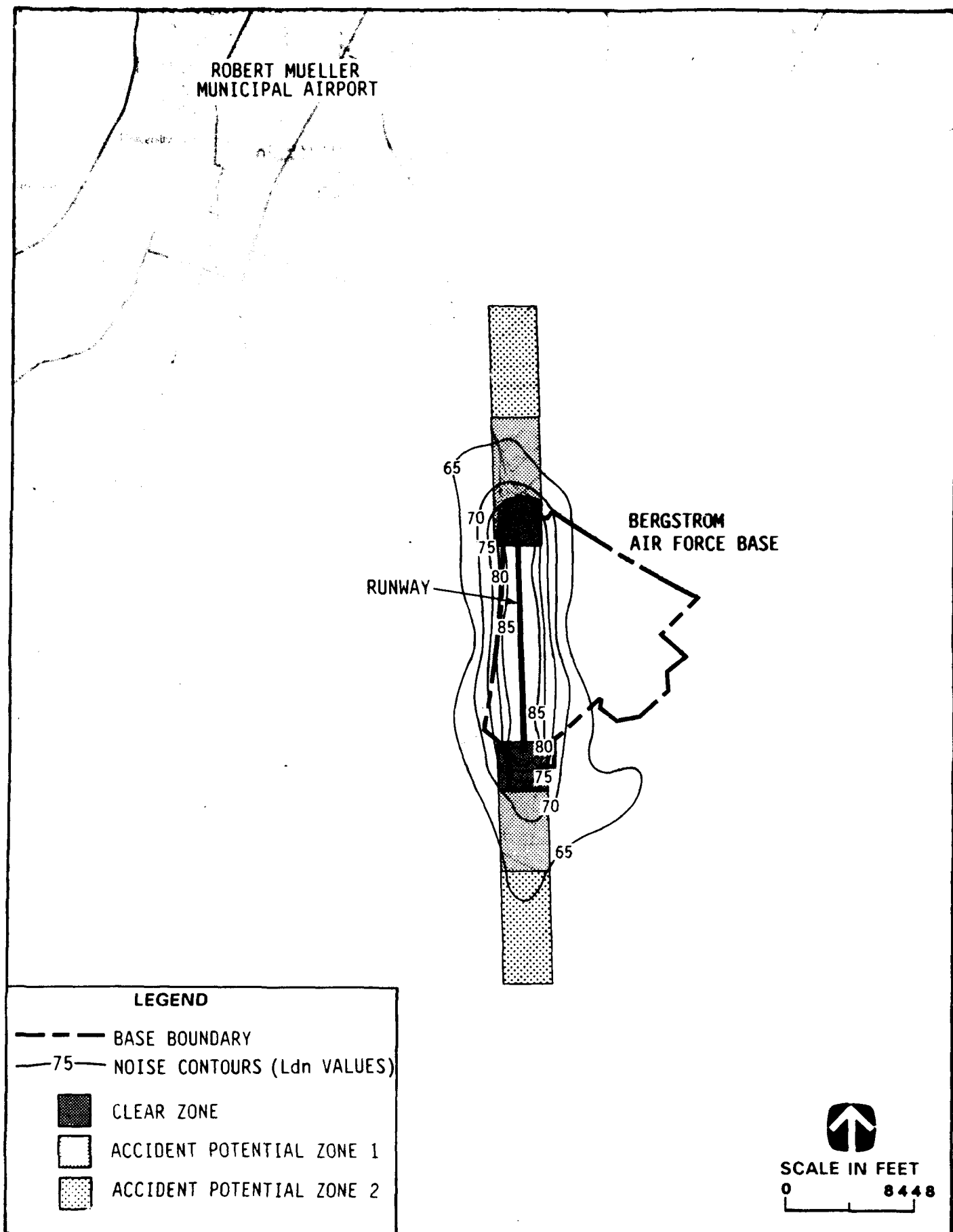


FIGURE 4.3.4-1 NOISE CONTOURS FOR F-16 AIRCRAFT ONLY AND ACCIDENT POTENTIAL ZONES, BERGSTROM AFB, TEXAS, 1993

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recorded during the cultural resources survey currently underway. Prehistoric sites that may be located along the banks of Onion Creek include buried occupation sites and quarry locations. It is likely that these sites may be considered eligible for the National Register of Historic Places (NRHP). However, these types of hunter-gatherer sites have relatively low visibility and are not likely to be affected by base closure.

4.3.6.2 Historic Resources

Historic resources may be identified during the cultural resources survey currently underway in the southeastern portion of the base near the Moore's Crossing/Fincher Road area. Any historic site in this location may be associated with existing sites and may be considered potentially NRHP eligible. However, any additional historic sites that may be recorded would not be affected by base closure. The Greenwood Cemetery is identified as a site but it is not historically significant. Cemeteries are listed among properties that ordinarily do not qualify for the NRHP (36CFR 60.4). Religious properties may qualify for the National Register if their importance derives from architectural or artistic distinction or historical associations, but such a case cannot be made for the Greenwood Cemetery.

4.3.6.3 Paleontological Resources

Paleontological materials may be associated with the Marlbrook Marl; however, these fossils represent a marine invertebrate assemblage and are relatively common in the region. Activities associated with closure would produce no impacts.

4.4 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

The closure of Bergstrom AFB is being studied as a result of military force restructuring. The closure would discontinue all current active military uses of the base. The Air Force Reserve unit currently operating at the base and the Regional Corrosion Control Facility will continue to function after closure.

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After closure, the risk of accidental hazardous material spills or releases due to active military operations would no longer exist. However, the risk of unintended releases of hazardous materials from the day-to-day operations of the Air Force Reserve and Regional Corrosion Control Facility would continue. The IRP sites currently under investigation will be precluded from development until they have been fully investigated and any necessary clean-up is completed.

The risk of military aircraft accidents would be significantly reduced. Hazards from aircraft accidents would be limited to flying operations of the 924 Air Force Reserve unit and transient aircraft.

The long-term socioeconomic productivity of the greater Austin area is not discussed in this EIS. A second EIS will be prepared to address the Air Force's proposed final disposition of the base property, including community reuse. When the proposed reuse(s) is identified, an economic impact study will be completed to examine socioeconomic factors. That study will be included in the reuse EIS.

The overall impacts to the environment from the closure of Bergstrom AFB would be beneficial in the short term. The long-term impacts are unknown because the future uses of the base have not been determined.

4.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable commitments of resources would be relatively minor. Transportation of equipment and other materials would require a short-term increase in energy usage and packing materials. The packing of materials and equipment would result in an increase in the solid waste streams and an irretrievable commitment of available landfill capacity.

4.6 POTENTIAL MITIGATION MEASURES

Because no significant environmental impacts would occur as a result of the base closure action, no mitigation measures are required. The caretaker team would provide building, ground, and water supply system maintenance, and would provide adequate security. This would further reduce any potential environmental impacts until the base reuse is finalized.

5.0 CONSULTATION AND COORDINATION

Listed below are the federal, state, and local agencies; private organizations; and individuals that were contacted during the course of preparing this Environmental Impact Statement. A number of other agencies and public officials were notified of the scoping meetings and to submit comments. These are listed in Appendix C, Draft Environmental Impact Statement Mailing List.

- Environmental Protection Agency, Region VI, Dallas, Texas
- U.S. Fish and Wildlife Service, Regional Director, Albuquerque, New Mexico (Allan Radcliffe)
- U.S. Fish and Wildlife Service, Ecological Services, Fort Worth, Texas (David A. Curtis)
- Federal Aviation Administration, Southwest Region, Fort Worth, Texas (Ms. Mo Kean)
- U.S. Geological Survey, Austin, Texas (Ernie Baker)
- Texas Parks and Wildlife Department, Austin (Floyd Potter)
- Texas Air Control Board, Austin (Al Langley, Roger Laprelle, personal communication, April 1990)
- Texas Water Development Board, Austin (Charlotte Schwartz, personal communication, April 1990)
- Texas Indian Commission, Austin (Ray Apodaca)
- Texas Historical Commission, Austin (James E. Bruseth)
- City of Austin, Department of Environment and Conservation (John Parish, personal communication, April 1990)
- City of Austin, Planning Department (Liz Badger, personal communication, April 1990)
- City of Austin, Water and Wastewater Department (Mike Erdman, personal communication, May 1990)
- City of Austin, Electric Department, System Engineering and Control (Sam Jones, personal communication, May 1990)

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- Del Valle Independent School District (Larry Mendoza, personal communication, May 1990)
- Valero Transmission Company, Austin (Lonny Grady, personal communication, April 1990)
- Bergstrom Air Force Base, Texas (personal communications with Tim Knapp, Mary Tom Kissell, Captain Dietz, Gloria Goode, Colonel Steiger, and Lieutenant Colonel Sutemeier)

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APPENDIX A - GLOSSARY OF TERMS AND ACRONYMS

TERMS

Active Fault. A fault on which movement has occurred during the past 10,000 years and which may be subject to recurring movement usually indicated by small, periodic displacement or seismic activity.

Air Installation Compatible Use Zone. A concept developed by the Air Force to promote land use development near its airfields in a manner that protects adjacent communities from noise and safety hazards associated with aircraft operations, and to preserve the operational integrity of the airfields.

Alluvium. A general term applied to sediments deposited by a stream or running water.

Ambient Air Quality Standards. Standards established on a state or federal level that define the limits for airborne concentrations of designated "criteria" pollutants (e.g., nitrogen dioxide, sulfur dioxide, carbon monoxide, total suspended particulates, ozone, lead, and hydrocarbons) to protect public health with an adequate margin of safety (primary standards) and to protect public welfare, including plant and animal life, visibility, and materials (secondary standards).

Aquifer. The water-bearing portion of subsurface earth material that yields or is capable of yielding useful quantities of water to wells.

Archaeology. A scientific approach to the study of human ecology, cultural history, and cultural process.

Attainment Area. An area that has been designated by the Environmental Protection Agency and the appropriate state air quality agency as having ambient air quality levels below the ceiling levels defined under the National Ambient Air Quality Standards.

Average Annual Daily Traffic. For a 1-year period, the total volume passing a point or segment of a highway facility in both directions, divided by the number of days in the year.

Bedrock. Geologic formation or unit which underlies soil or other unconsolidated surficial deposits.

Climate. The prevalent or characteristic meteorological conditions (and their extremes) of any given location or region.

Comprehensive Plan. A public document, usually consisting of maps, text, and supporting materials, adopted and approved by a local government legislative body, which describes future land uses, goals, and policies.

Cumulative Impacts. The combined impacts resulting from all programs occurring concurrently at a given location.

Dolomite. A general term applied to sedimentary rocks composed of calcium and magnesium carbonate.

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Earthquake. A sudden motion or trembling in the earth caused by the displacement of rocks below the earth's surface due to a release of strain.

Effluent. Wastewater discharge from a wastewater treatment facility.

Endangered Species. A species that is threatened with extinction throughout all or a significant portion of its range.

Environmental Impact Analysis Process. The process of conducting environmental studies as outlined in Air Force Regulation 19-2.

Escarpment. A long cliff or steep slope separating two comparatively level or more gently sloping surfaces; results from erosion or faulting.

Fault. A fracture or zone of fractures along which there has been movement of the sides relative to one another and parallel to the fracture.

Fault Zone. An area or region that is expressed as a zone of numerous fractures or faults.

Federal-Candidate Species. Taxa placed in Federal Categories 1 and 2 by the U.S. Fish and Wildlife Service, which are candidates for possible addition to the List of Endangered and Threatened Species.

Floodplain. The relatively flat land lying adjacent to a river channel that is covered by water when the river overflows its banks.

Geologic Hazard. A naturally occurring or man-made geologic condition or phenomenon that presents a risk or is a potential danger to life and/or property.

Hazardous Materials. Both nonradioactive (e.g., missile propellants and diesel fuel) and radioactive materials.

Hazardous Waste. A waste, or combination of wastes, which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to an increase in mortality or an increase in serious irreversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Historic. A period of time after the advent of written history dating to the time first Euro-American contact in an area. Also refers to items primarily of Euro-American manufacture.

Hydrology. The science dealing with the properties, distribution, and circulation of water on the surface of the land and in the soil and underlying rocks.

Impact. An assessment of the meaning of changes in all attributes being studied for a given resource; an aggregation of all the adverse effects, usually measured using a qualitative and nominally subjective technique.

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L_{dn} Noise Level. The 24-hour average-energy sound level expressed in decibels, with a 10-decibel penalty added to sound levels between 10:00 P.M. and 7:00 A.M.

Level of Service. In transportation analyses, a qualitative measure describing operational conditions within a traffic stream and how they are perceived by motorists and/or passengers. In public services, a measure describing the amount of public services (e.g., fire protection and law enforcement services) available to community residents, generally expressed as the number of personnel providing the services per 1,000 population.

Miocene. An epoch of the Tertiary period, 24 million to 5 million years ago, marked by the development of apes and the appearance of ancestral gibbons.

Mitigation. A method or action to reduce or eliminate program impacts.

National Register of Historic Places. A register of districts, sites, buildings, structures, and objects important in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior under authority of Section 2(b) of the Historic Sites Act of 1935 and Section 101(a)(1) of the National Historic Preservation Act of 1966, as amended.

Native Americans. Used in a collective sense to refer to natives of North America.

Nonattainment Area. An area that has been designated by the Environmental Protection Agency and the appropriate state air quality agency as exceeding one or more National Ambient Air Quality Standards.

Paleontological Resources. Fossilized organic remains from past geological periods.

Prehistoric. The period of time before the written record, and before Europeans entered an area.

Prime Farmland. Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary of Agriculture (Farmland Protection Policy Act, 7 CFR § 658).

Quaternary. A geologic period representing the last 1.6 million years of earth's history which includes the Pleistocene and Holocene (Recent) epochs.

Riparian. Of or relating to land lying immediately adjacent to a water body, and having specific characteristics of that transitional area (e.g., riparian vegetation).

Soil. A natural body consisting of layers or horizons of mineral and/or organic constituents of variable thickness and differing from the parent material in their morphological, physical, chemical, and mineralogical properties, and biological characteristics.

State Historic Preservation Officer. The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as liaison for purposes of implementing the National Historic Preservation Act.

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State-Sensitive/State-Recognized Species. Plant and wildlife species in each state that are monitored and listed for purposes of protection.

Terrace. A flat portion of land created when a stream or river cuts farther into its channel and migrates laterally to a different location. In river valleys, they typically represent former levels of the valley floodplain.

Tertiary. The first period of the Cenozoic era extending between 66 million and 1.6 million years ago.

Threatened Species. Taxa likely to become endangered in the foreseeable future.

Unique and Sensitive Habitats. Areas that are especially important to regional wildlife populations or protected species that have other important biological characteristics (e.g., severe wintering habitats, nesting areas, and wetlands).

Wetlands. Areas that are inundated or saturated with surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil, including swamps, marshes, bogs, and similar areas.

Zoning. The division of a municipality (or county) into districts for the purpose of regulating land use, bulk of building, required yards, necessary off-street parking, and other prerequisites to development. Zones are generally shown on a map and the text of the zoning ordinance specifies requirements for each zoning category.

ACRONYMS

ADT	Average Daily Traffic
AFB	Air Force Base
AFR	Air Force Regulation
AFRES	Air Force Reserves
AICUZ	Air Installation Compatible Use Zone
APZ	Accident Potential Zone
ARSA	Airport Radar Service Area
CBD	Central Business District
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CHAMPUS	Civilian Health and Medical Program of the Uniformed Services
COE	U.S. Army Corps of Engineers
CUD	Compatible Use District
CZ	Clear Zone
DEIS	Draft Environmental Impact Statement
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DOD	U.S. Department of Defense
DRMO	Defense Reutilization and Marketing Office
EAC	President's Economic Adjustment Committee
EIAP	Environmental Impact Analysis Process

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EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ETJ	Extraterritorial Jurisdiction
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FY	Fiscal Year
HQ	Headquarters
HUD	Department of Housing and Urban Development
IFR	Instrument Flight Rules
IHWSA	Interim Hazardous Waste Storage Area
IRP	Installation Restoration Program
LCRA	Lower Colorado River Authority
LOS	Level of Service
MOA	Military Operating Area
MOGAS	Automotive Gasoline
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OEА	Office of Economic Adjustment
POL	Petroleum, Oil and Lubricants
PSD	Prevention of Significant Deterioration
RAMP	Radon Assessment and Mitigation Program
RCRA	Resource Conservation and Recovery Act
SAC	Strategic Air Command
SARA	Superfund Amendments and Reauthorization Act
TAC	Tactical Air Command
TACG	Tactical Air Control Group
TACS	Tactical Air Control System
TFG	Tactical Fighter Group
TRS	Tactical Reconnaissance Squadron
TRTS	Tactical Reconnaissance Training Squadron
TRW	Tactical Reconnaissance Wing
TSDF	Treatment, Storage, and Disposal Facility
TSP	Total Suspended Particulates
TWC	Texas Water Commission
UST	Underground Storage Tank
VRF	Visual Flight Rules
VTC	Valero Transmission Company
WSA	Weapon Storage Area

UNITS OF MEASUREMENT

dB	decibel
dBA	decibel on the A-weighted scale
kV	kilovolt
kWh	kilowatt-hour
L_{dn}	day/night equivalent noise level
Mcf	thousand cubic feet
MG	million gallons
MGD	million gallons per day
mi	mile
MMcf	million cubic feet
MV	megavolt
MVA	megavolt-ampere
MW	megawatt
PM_{10}	particulate matter (less than 10 micrometers in diameter)
ppm	parts per million
sq km	square kilometer
$\mu\text{g}/\text{m}^3$	microgram per cubic meter

CHEMICAL ABBREVIATIONS

CO	Carbon Monoxide
O_3	Ozone
NO_x	Nitrogen Oxides
NO_2	Nitrogen Dioxide
PCB	Polychlorinated Biphenyls
SO_x	Sulfur Oxides
SO_2	Sulfur Dioxide
TCE	Trichlorethylene
VOC	Volatile Organic Compounds

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APPENDIX B - RECORD OF PUBLIC NOTIFICATION

As part of the scoping process, the Air Force conducted a series of meetings to determine the issues and concerns that should be identified in the Environmental Impact Statement (EIS) for the proposed closure of Bergstrom Air Force Base, Texas. The Air Force notified the public of both the scoping meeting and the preparation of the EIS through a Notice of Intent (NOI) published in the *Federal Register* on 9 February 1990. A copy of the NOI follows.

FOR OFFICIAL USE ONLY

NOTICE OF INTENT
TO PREPARE ENVIRONMENTAL IMPACT STATEMENTS
BERGSTROM AIR FORCE BASE, TEXAS

The United States Air Force intends to study the closing of Bergstrom AFB, Texas by the end of FY 1993 as a result of force structure changes. As part of that study process, the Air Force will prepare two Environmental Impact Statements (EISs) for use in decision-making regarding the proposed closure and final disposition/reuse of property at Bergstrom AFB.

The first environmental impact statement (EIS) will be prepared to assess the potential environmental impact of the possible closure of Bergstrom AFB. The EIS will discuss the potential environmental impacts of withdrawing RF-4C reconnaissance aircraft and realigning them to other units. It will also discuss the relocation of Headquarters 12th Air Force with its associated units and the 4500th School Squadron (Detachment 2) to Davis Monthan AFB, Arizona and the 712th Air Support Operations Squadron to a location to be determined. Active duty Air Force tenant units not inactivated would also be relocated. The EIS will also analyze the no action alternative to closing Bergstrom AFB. Air Reserve functions including Headquarters 10th Air Force and the 924th Tactical Fighter Group currently at Bergstrom will not be considered for relocation.

The reuse EIS will only be completed if there is a final decision to close the base. This EIS would cover the final disposition of excess property. All excess property would be disposed of in accordance with provisions of Public Law, federal property disposal regulations and Executive Order 12512.

The Air Force is planning to conduct a series of scoping meetings to determine the issues and concerns that should be addressed in the two EISs. Notice of the time and place of the planned scoping meetings will be made available to public officials and announced in the news media in the areas where the meetings will be held.

To assure the Air Force will have sufficient time to consider public inputs on issues to be included in the development of the first EIS, comments should be forwarded to the addressee listed below by March 15, 1990. However, the Air Force will accept comments to the addressee below at any time during the environmental impact analysis process.

For further information concerning the study of Bergstrom AFB for possible closure and EIS activities, contact:

Director of Environmental Planning
AFRCE-BMS/DEP
Norton AFB, San Bernardino CA 92409-6448

APPENDIX C - DRAFT ENVIRONMENTAL IMPACT STATEMENT MAILING LIST

ELECTED OFFICIALS

U.S. Senate

Senator Lloyd Bentsen
Senator Phill Gramm

U.S. House of Representatives

Congressman J. J. Pickle

State Officials

Governor

The Honorable William Clements
Governor

The Honorable William P. Hobby
Lieutenant Governor

State Senate

Senator Gonzalo Barrientos

House of Representatives

Representative Wilhelmina Delco
Representative Lena Guerrero
Representative Gib Lewis
Representative Libby Linebarger
Representative Bob Richardson
Representative Terral Smith

Local Officials

The Honorable Lee Cooke,
Mayor of Austin, Texas

The Honorable Sally Shipman
Mayor Pro Tempore of Austin, Texas

Public Agencies

Federal Agencies

U.S. Department of Agriculture
Forest Service
Environmental Coordination Office

Ms. Mary Anne T. Knauss
Deputy Assistant Secretary for
Intergovernment Affairs

Mr. Barry Kennedy
U.S. Army Corp of Engineers

Dr. Robert M. Rauner, Director
Office of Economic Adjustment
Department of Defense

Mr. Frederick L. Meadow, Chief
Grants Policy & Procedures Branch
Environmental Protection Agency

Mr. Fred A. Newton III, Director
Office of Program Analysis
and Evaluation
Federal Emergency Management Agency

Mr. Thomas Fleming
Office of Program Initiatives
General Services Administration

Mr. Joel Feinglass, Director
Division of Assistance Policy
Department of Health and Human Services

Mr. Drew Albritten
Office of Intergovernmental Relations
Department of Housing and Urban
Development

Mr. Cecil Coleman
Division of Acquisition and Grants
Department of the Interior

Mr. Paul Colbern
Office of Legal Policy
Department of Justice

Mr. Richard Whitney
Special Assistant
Intergovernmental Affairs
Department of Labor

Mr. James M. Bayne, Chief
Real Property Management Branch
National Aeronautics and Space
Administration

Mr. Frank P. Rowan
Real Estate & Building Department
U.S. Postal Service

Mr. Martin Teckler, Associated General
Counsel for Legislation
Small Business Administration

Mr. Charles Ventura, Chief
Grants Management Division
Department of Transportation

Mr. Ed Arnold
Veterans Administration

Mr. John W. Merck
Deputy Associate Director
Planning & Communications Management
Division
Office of Management & Budget

Mr. Michael McCurry
Department of the Interior
Office of Aircraft Services

Environmental Planning Division
AFRCE-CR/ROV

Department of Housing and Urban
Development

Environmental Protection Agency, Region VI
Department of the Interior
Fish & Wildlife Service

Department of the Interior
National Park Service
Southwest Region

Department of the Interior
Bureau of Indian Affairs

Department of the Interior
Bureau of Land Management

Air Force Representative
Federal Aviation Administration

Federal Aviation Administration
Southwest Region, Regional Director

Ms. Claudia Nissley, Director
Western Office of Project Review
Advisory Council on Historic Preservation

General Services Administration
Regional Offices of Real Estate Sales
Region 7

National Forest Service
Region 3, Southwestern

State Agencies

Mr. Thomas C. Adams
Office of Budget and Planning
State Point of Contact
Office of the Governor

State Historic Preservation Office

Mr. Curtis Tunnell
Executive Director
State Historic Preservation Officer
Texas Historical Commission

Other Organizations

National Resources Defense Council, Inc.
National Audubon Society
Ms. Dede Armentrout, Vice President
Southwest, National Audubon Society
National Wildlife Federation
Mr. Gene G. Stout, Region 8
National Wildlife Federation
The Nature Conservancy

The Nature Conservancy
Southeast Regional Office
The Sierra Club
Ms. Beth Johnson, Southern Plains
Representative, The Sierra Club
Sportmen's Club of Texas, Inc.
Native Plant Society of Texas
Texas Committee on Natural Resources
Texas Forestry Association
Mr. Bruce Thompson, President,
Wildlife Society Texas Chapter

Other Individuals Who Requested the Draft Environmental Impact Statement

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Dennis Jasek
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Raymond S. Wittig
Mickey L. Wright
Anne S. Wynne
W.C. Zatopek
Danny Zieger